

# WILD LIFE IN KENTUCKY

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WILLIAM DELBERT FUNKHOUSER



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Survey*

WILLARD ROUSE JILLSON  
DIRECTOR and STATE GEOLOGIST



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Original painting by Leonard Giovannoli

KENTUCKY CARDINAL

# WILD LIFE IN KENTUCKY

The Reptiles, Birds and Mammals of the Commonwealth, with a  
discussion of their appearance, habits and  
economic importance



BY

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Homologies of Wingveins,  
Membracidae of Cayuga Lake Basin  
Neotropical Homoptera  
Outlines of Zoology  
Etc.

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By Willard Rouse Jillson,  
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## LETTER OF TRANSMISSION

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DR. W. R. JILLSON, Director,  
Kentucky Geological Survey,  
Frankfort, Kentucky.

*Dear Sir:*

I beg to transmit herewith manuscript for report on "Wild Life in Kentucky" as per your request.

This report attempts to catalogue the Reptiles, Birds and Mammals of this Commonwealth and is the first list of this nature to be published.

The original painting for the frontispiece and the colored plates tipped in have been donated by a friend of Kentucky birds and are thus reproduced here without any expense to the State.

Respectfully submitted,

W. D. FUNKHOUSER.

UNIVERSITY OF KENTUCKY

LEXINGTON, KY., October 1, 1924.



## PREFACE

At the request of Dr. W. R. Jillson, State Geologist and Director of the Kentucky Geological Survey, this report has been prepared with the idea that it may furnish a descriptive catalogue of the animals of the three classes considered which are found at the present time in the State of Kentucky.

The list is doubtless incomplete but it includes all available records which may be considered trustworthy and it is hoped that with this beginning other records may be secured, as attention is directed toward the subject, which may eventually result in a complete check-list of the fauna of the State.

With the many superstitions and local beliefs regarding certain of the reptiles; with the increasing interest in birds both as to their economic importance in their relation to farm, orchard and garden and the attention which had been directed to them in the Nature Study work of our schools in the attempt to protect our native songbirds; with the rapid decrease of most of our wild mammals, and with the rapidly awakening desire to preserve an authentic record of the natural resources of the State, has come a demand for information regarding these animals which it has been impossible to supply.

Much indeed is lacking in the way of records of occurrence, range, distribution, migrations, breeding areas and abundance of many of the species here listed. Undoubtedly many species occur in localities which are not here credited and if this list can serve as a challenge to local observers to make definite and authentic records of the animals in their vicinities it will have served a valuable purpose. Kentucky was once a famous hunting ground; at present the animal life is becoming rapidly diminished; future generations will have to depend on our records for a knowledge of the faunal history of the State.

This report has been written for the layman. Technical scientific terms have been avoided in so far as possible and where unavoidable have been explained. It is hoped that the result may be a terse, reliable and more or less interesting account of some of the animals which the citizens of Kentucky may find on their own farms and in their own localities.

Particularly, it is hoped that this report may be of service



to the Audubon Societies and Bird Clubs throughout the State in connection with their records and check-lists; to the teachers and students in the schools in their studies of the animal life in their communities, and to the agriculturists in their efforts to distinguish between their animal friends and foes.

The constant inquiries which have been received regarding these subjects have furnished the chief reason for the preparation of the following pages.

### ACKNOWLEDGMENTS

This report could not have been prepared, of course, without the assistance of many interested persons throughout the State.

Hundreds of reports and specimens have been received from county agents, farmers, hunters, teachers, students, boy scouts, members of bird clubs, and others who are familiar with the animals of special regions, and to all of these the writer desires to express his thanks. The names of those who have furnished special data are noted in parentheses after their records and it is hoped that none have been omitted.

The writer is especially indebted to Dr. W. R. Jillson, State Geologist, for his encouragement and interest in the preparation of this work and for permission to use a number of his plates; to Professor A. M. Miller, Head of the Department of Geology of the University of Kentucky, for suggestions and criticisms pertaining to the paleontological and historical portions of the text; to Mr. Victor K. Dodge, of Lexington for the use of his very complete list of birds of the State and for a number of specimens and special records; to Mr. William R. Campbell of Lexington for his records of birds of the Blue Grass containing the field notes of a large number of observers; to Mr. B. J. Blincoe of Dayton, Ohio, formerly of Bardstown, Kentucky, for his excellent records covering a considerable number of years of the birds of Nelson County; to Professor Gordon Wilson of Bowling Green for his lists of birds of Bowling Green and of Ballard County; to Mrs. Lucas Brodhead of Versailles for special records of the warblers; to Mr. James Speed of Louisville for a number of his photographs; and to Mr. Leonard Giovannoli of Lexington for the original painting of the Kentucky Cardinal used as the frontispiece.

## TABLE OF CONTENTS

	Page
Preface .....	VII
Acknowledgments .....	VIII
Contents .....	IX
Illustrations .....	XI
Chapter I.	
Natural Conditions Affecting Animals .....	1
Geography .....	1
Physiography .....	1
Climate .....	9
Soils .....	12
Drainage .....	18
Bodies of Water .....	18
Caves .....	21
Chapter II.	
Faunal History of Kentucky .....	27
Ancient Marine Life .....	27
Beginnings of Land Life .....	29
Prehistoric Animals .....	30
Pre-Colonial Times .....	32
Animals Found by the First Settlers .....	33
Chapter III.	
Present Fauna of the State .....	45
Animals Represented .....	45
Preservation of Wild Life .....	48
Faunal Areas .....	48
Animal Groups .....	54
The Chordata .....	57
The Vertebrata .....	57
Sources of Information .....	58
Chapter IV.	
The Reptiles of Kentucky .....	61
The Class Reptilia .....	61
The Turtles and Tortoises .....	61
The Lizards .....	73
The Snakes .....	80
Popular Abhorrence of Snakes .....	82
Structure of Snakes .....	84
Habits of Snakes .....	85
Venomous and Non-venomous Snakes .....	89
Treatment of Bites of Venomous Snakes .....	92
Popular Superstitions Regarding Snakes .....	93
Economic Importance of Snakes .....	101
List of Species of Kentucky Snakes .....	103



## Chapter V.

	Page
The Birds of Kentucky .....	143
Kentucky as a Bird Region .....	143
Decrease of Our Native Birds .....	143
Value of Our Birds .....	145
Bird Enemies .....	147
Protection of Birds .....	149
Seasonal Distribution .....	152
Descriptive Terms .....	153
List of Species of Kentucky Birds .....	154

## Chapter VI.

The Mammals of Kentucky .....	307
Native Mammals .....	307
Introduced Mammals .....	307
Characters of Mammals .....	309
Records .....	309
Descriptive Terms .....	309
List of Species of Kentucky Mammals .....	310
Bibliography .....	354
Index .....	362

## ILLUSTRATIONS

### Frontispiece—The Kentucky Cardinal by L. Giovannoli.

Fig.		Page
1.	Physiographic Regions of Kentucky—Map .....	2
2.	Mountain Topography .....	3
3.	Knob Scenery .....	4
4.	Typical Physiography of the Blue Grass .....	4
5.	The Cavernous Limestone Region .....	5
6.	A View in the Western Coal Field .....	7
7.	Topography of the Purchase Region .....	8
8.	Characteristic Timber of the "Purchase" .....	9
9.	Subdivisions of Physiographic Regions—Map .....	10
10.	Spring in Kentucky .....	11
11.	By Roadside and Stream .....	13
12.	Mountain Vegetation .....	15
13.	A Mountain Cabin .....	16
14.	The Refuge of the Fox and Skunk .....	17
15.	Drainage Map .....	19
16.	A Kentucky River Valley .....	20
17.	A Good Stretch of Water .....	20
18.	In a Kentucky Cave .....	22
19.	An Early Kentuckian .....	24
20.	A Young Archaeologist .....	25
21.	When Kentucky was under Water .....	27
22.	Searching for the Remains of Prehistoric Animals .....	28
23.	Skull of Bison .....	37
24.	A Reminder of Early Days .....	43
25.	Faunal Areas of Kentucky—Map .....	47
26.	The Eastern Highlands .....	48
27.	The Coalings .....	49
28.	A Beautiful River Valley .....	50
29.	The "Purchase" .....	51
30.	River Scene in the Southwestern Plateau .....	52
31.	The "Barrens" .....	53
32.	The "Knobs" .....	54
33.	The "Blue Grass" .....	55
34.	A Turtle .....	62
35.	"Locked Up" .....	63
36.	A Soft Body but Wicked Jaws .....	70
37.	A Typical Lizard .....	74
38.	The "Glass Snake" .....	76
39.	An Ideal Spot for Snakes .....	82
40.	Vertebrae and Ribs of a Snake .....	84
41.	Poison Apparatus of a Snake .....	88
42.	Head of a Venomous Snake showing Pit .....	90
43.	Undersurface of Tails of Venomous and Non-venomous Snake ..	90
44.	Head Scutellation of a Venomous and a Non-venomous Snake ..	91
45.	Rattlesnake "Committing Suicide" .....	99



Fig.	Page
46. Head Scutellation of a Snake .....	102
47. A Garter Snake .....	103
48. Common Water Snake .....	108
49. The Blacksnake .....	112
50. Blacksnake coiled about a Rabbit .....	115
51. The Milk Snake .....	122
52. The Hog-nosed Snake or "Spread-Head" .....	127
53. The Copperhead .....	133
54. Where the Copperhead Basks .....	135
55. The Home of the Rattlesnake .....	138
56. Ready for Business .....	140
57. A Bird Paradise .....	144
58. Caring for the Birds .....	150
59. Outline of a Bird showing Feather Areas .....	153
60. A Resort of Water Birds .....	160
61. Where the Wood Duck Nests .....	165
62. The Haunt of the Heron .....	173
63. The Black-crowned Night Heron .....	177
64. Good Cover for Birds .....	188
65. The Quail .....	189
66. Cooper's Hawk .....	204
67. Red-shouldered Hawk .....	206
68. Domain of the Golden Eagle .....	208
69. The Light hurts His Eyes .....	214
70. An Enemy to Hairy Caterpillars .....	217
71. On the Lookout for Grubs .....	220
72. Nighthawk on Eggs .....	226
73. A Baby Nighthawk .....	227
74. Habitat of the Meadowlark and Mourning Dove .....	239
75. Nest of Meadowlark with Eggs .....	240
76. The Master Weaver .....	241
77. A Marvel of Architecture .....	242
78. A Winter Guest .....	253
79. A Plainly Clad Musician .....	255
80. A Happy Whistler .....	258
81. Heads of Warblers .....	270
82. The Forest Primeval .....	308
83. An Albino Squirrel .....	325
84. The Squirrel-hunter's Paradise .....	328
85. The Miner .....	332
86. Where the Bats Congregate .....	334
87. The Home of the Mink .....	345
88. Interested in the Game .....	352
89. Tailpiece—"Ye Olden Days" .....	361

## WILD LIFE IN KENTUCKY

## CHAPTER I.

### NATURAL CONDITIONS AFFECTING ANIMALS

#### GEOGRAPHY

Kentucky is one of the largest of the South Central States, having a maximum length of nearly 400 miles, a maximum breadth of about 175 miles, and an area of nearly 40,600 square miles. The Ohio River forms its northern boundary, separating it from Ohio, Indiana and Illinois; on the west the Mississippi River separates it from Missouri; it is bounded on the south by Tennessee, on the southeast by Virginia, and on the northeast by West Virginia. It extends from latitude  $36^{\circ} 30'$  to  $39^{\circ} 6' N.$  and from longitude  $82^{\circ}$  to  $89^{\circ} 38' W.$

#### PHYSIOGRAPHY

The physiography of Kentucky is sufficiently varied to provide a rather wide range of those physical features which have a distinct bearing on animal life.

According to its physical and geological configuration, the State may be roughly divided into six rather well-defined regions which are generally designated as the Mountains, the Knobs, the Blue Grass, the Cavernous Limestone Area, the Western Coal Field, and the Purchase.

*The Mountains.* The eastern part of the State is largely mountainous, in reality a maturely dissected plateau, surmounted by the Cumberland and Pine Mountain ranges, some of the peaks attaining a height of over 4,000 feet, and the whole region having an average elevation of about 1,500 feet. This region, which covers over 10,000 square miles, is very rugged, and, being poorly adapted for agriculture, is in many parts thinly settled and well wooded. The steep, almost insurmountable faces of the mountains, covered with a dense, tangled undergrowth of shrubs, offer concealment to the forest-loving animals, and here may still be found the wild turkey, an occasional wild-cat, and more rarely a bear.





The "Knobs" extend in a rough semicircle around the Blue Grass. The eastern arc of the circle begins at the Ohio River in Lewis County and extends southwestward through the counties of Lewis, Rowan, Menifee, Powell and Estill; the southern arc runs between Madison and Jackson Counties, through the southern part of Madison and the northern border of Jackson.



FIG. 2 *Photo by W. H. Johnson*  
MOUNTAIN TOPOGRAPHY  
Rough Country in Johnson County

includes a narrow strip in southern Garrard and a considerable area in northern Rockcastle, the southern half of Lincoln and of Boyle with irregular extensions southward in Pulaski and along the Green River in Casey, and occupies most of the southern part of Marion; the western arc runs northward along Salt River through Marion, Nelson and Bullitt Counties and into Jefferson County to the Ohio River. The part of the western arc facing the Blue Grass is rather precipitous and is known as "Mauldraugh's Hill"; the northern extremity of this region, in the vicinity of Louisville, is often popularly termed the "Bear Grass." Altogether the Knobs include over 5,000 square miles of rather rough country, characterized by the more or less cone-





FIG. 3 Photo by A. M. Miller  
KNOB SCENERY

A view near Natural Bridge showing the striking topography of this region. Note the "knob" in the middle background.

shaped sandstone "knobs" which suggest the name for the region

*The Blue Grass.* The term "Blue Grass" is a rather flexible



FIG. 4 Photo by A. M. Miller  
TYPICAL PHYSIOGRAPHY OF THE BLUE GRASS  
A road near Danville showing the level, fertile fields of this region

one. It is used broadly to designate all of that area of level or rolling country enclosed by the Knobs and northward to the Ohio River, a region of wonderful fertility covering in the neighborhood of 8,000 square miles. More particularly the term is applied to only the central part of this region, embracing some 2,000 square miles of what may be called the Elkhorn District around the city of Lexington, sometimes spoken of as the "heart of the Blue Grass." As a physiographical area we are considering the term as used in its broadest sense.

*The Cavernous Limestone Area* of the State as here con-



FIG. 5 Photo by A. M. Miller  
THE CAVERNOUS LIMESTONE REGION  
Showing a characteristic "sink-hole" in northwestern Allen County

sidered as a physiographical region really consists of two distinct geological areas—the Mammoth Cave Limestone Outcrop and the Waverly Outcrop. The former is an arcuate plateau surrounding both the Western Coal Field and the Chester Outcrop and covers an area of nearly 9,000 square miles. It is roughly "U"-shaped, the eastern arm of the "U" extending along side of the Knobs southward from the Ohio River in Meade, Hardin, Larue, Hart, Edmonson and Barren Counties, thence westward through Warren County and the southern tier of Simpson, Logan, Todd, Christian and Trigg, and northward on the north side of

the Tennessee River through Lyon County almost to the Ohio River. Narrow and more or less scattered outcrops of this limestone occur also between the Knobs and the Mountains in the more eastern counties but these may be ignored in the discussion of a strictly physiographical region. The limestone plateau is high, rising gradually from 600 feet above sea level on the west to over 1,200 feet on the eastern boundary. It is characterized by the "sinks" which allow the surface water to find its way into underground channels,\* and by the great caves, including Mammoth Cave, Onyx Cave, and Crystal Cave, which are world famous. In parts of this region the streams are all entirely underground and the area is rich in "lost rivers" and similar phenomena, while caverns of all sizes exist in great abundance. This region includes also the so-called "Barrens" which have had a very interesting physiographical history and will be mentioned later in connection with the discussion of the faunal areas of the State and with reference to a number of animals, particularly the buffalo. The Waverly Outcrop extends eastward from the southern part of this region to the mountains, and while geologically a distinct area does not differ enough physiographically to warrant a separate classification. The Waverly region is in some parts rough and diversified in topography and is not considered a part of the "Barrens."

The *Western Coal Field*, embracing an area of nearly 5,000 square miles, lies in the northwestern part of the State and includes the counties of Union, Webster, Hopkins, Muhlenberg, Ohio, Daviess, McLean and Henderson, and parts of Hancock, Butler, Grayson and Edmonson, with a narrow tongue extending eastward through Hart into Larue and between Marion and Taylor. The configuration of the region is rugged but not high and it shows considerable variation in its types of topography. Parts of it are well wooded. Near the Ohio River, in this area, is some of the best collecting ground in the State for the entomologist and herpetologist.

Strictly speaking the Western Coal Field is not adjacent to the Cavernous Limestone Area but is separated from it by a

\*Dr. W. R. Jillson, State Geologist, in an address delivered before the Kentucky Academy of Science, May 12, 1923, characterized this region as "The Land of Ten Thousand Sinks."

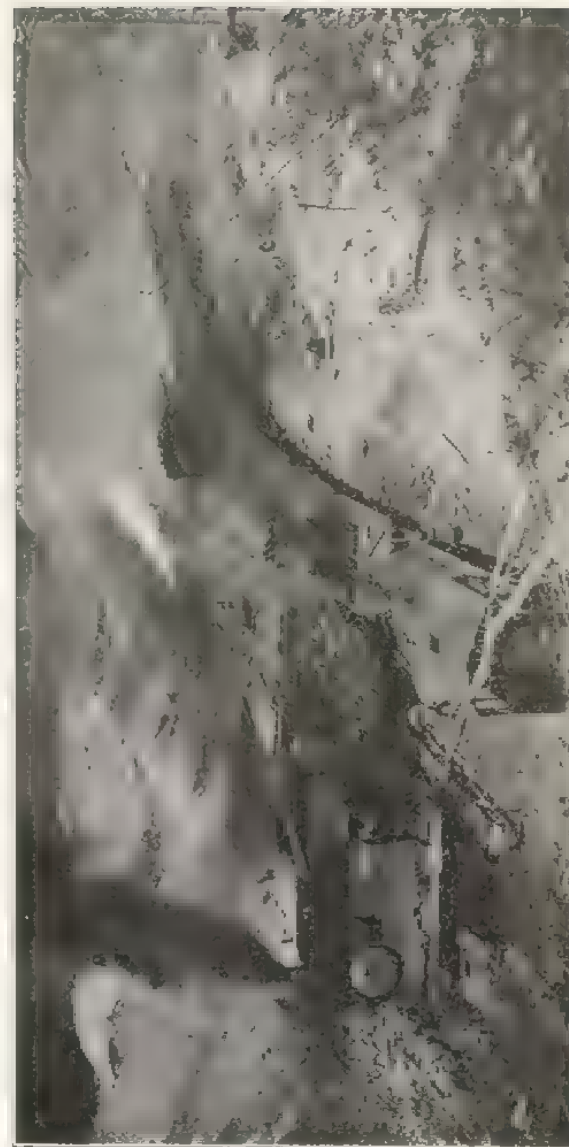


FIG. 6  
A VIEW IN THE WESTERN COAL FIELD

No. 310. Western Colliers Coal Co. stripping operation on the former Trade-water Coal Co. property of Illisley, Kentucky, showing steam shovel, loading coal in the left foreground the captured trucks show where the coal has been extracted. J. G. Harris, May. The company owns 600 acres

Photo by W. R. Jillson

distinct geological formation, the Chester Outcrop, as indicated on the accompanying map. From a physiographical standpoint, however, the topography of this formation does not differ enough from that of the Coal Field to be considered as distinct, and it is here included as part of that area.



Fig. 7 Photo by W. E. Jilson  
TOPOGRAPHY OF THE PURCHASE REGION  
A view from the high bluffs at Hickman

The "Purchase" or "The Jackson Purchase" is perhaps the most distinct geological and physiographical area in Kentucky. It includes all of that part of the State west of the Tennessee River—some 2,500 square miles of territory which was purchased from the Chicasaw Indians—hence the popular name. It is not only a distinct region geologically but it is very different from other parts of the State in its animal life. As a faunal area it must be considered as a part of the Lower Austral Zone. The country is low, mostly 500 feet above sea level, and geologically represents an ancient extension of the Gulf of Mexico. Marshes and ponds abound, and here are to be found the wood duck and often a "cotton-mouth" water moccasin.

## CLIMATE

As would be expected from the diversified topography of the State, the climate varies considerably, as it is influenced by physiographical conditions. On the whole, however, it is milder and more equable than that of any other State in the same



Fig. 8 Photo by W. A. Anderson  
CHARACTERISTIC TIMBER OF THE PURCHASE  
A young flood-plain forest in Ballard County

latitude. The average amount of sunshine (in percent of the possible) is very high and the "sunshine of Kentucky" is more than a mere tradition.

The mean annual temperature for the State is about 55°F. The average for January is 35° and for July, 78°. The lowest temperatures are found in the mountains where the average for the year (Cumberland Mountain records) is about 50° and the highest are found along the Mississippi River where the average is slightly above 60°. Between these regions the change is gradual. The summers are long, warm and bright, but the heat is not excessive, the temperature very seldom reaching 100°. The winters are often marked with considerable rainfall, but there is very little snow and zero weather is exceptional and of very short duration. The snow does not remain long on the



ground and it is not uncommon to have grass for stock practically throughout the year. This not only favors the present industry in horses and cattle, but doubtless explained the presence in Kentucky of the great herds of buffalo in the early days.

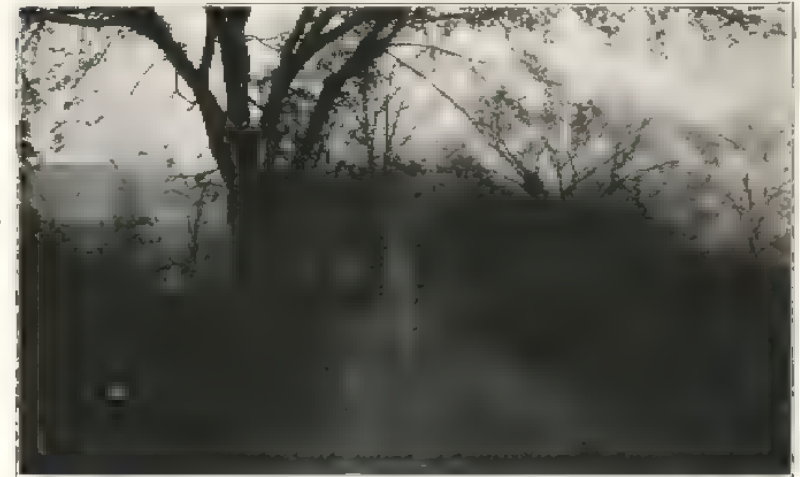
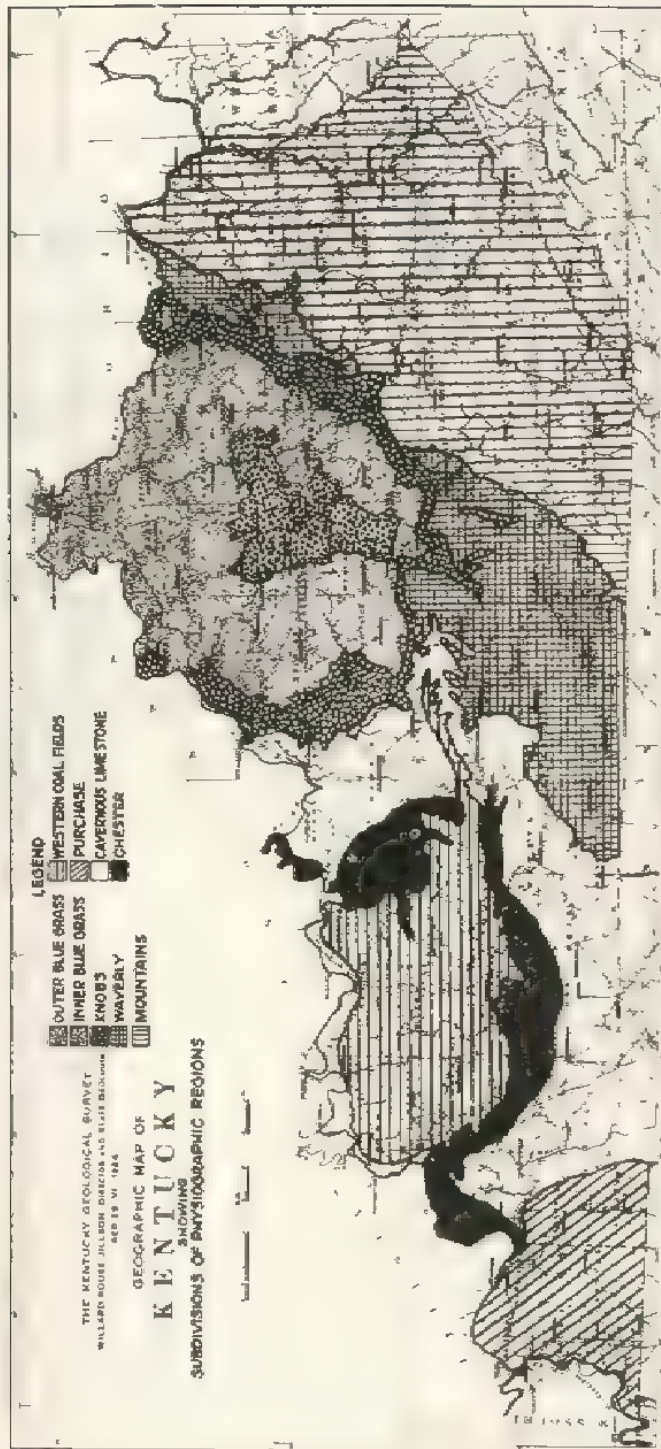


FIG. 10  
SPRING IN KENTUCKY  
A view in Franklin County

The beauties of spring and summer and the glories of autumn in Kentucky have been the themes of praise by many writers, and not without cause, for few regions can surpass the State in attractiveness of climate. It will be noted that this influences the life histories of various species of animals to be discussed in this report, particularly the dates of the appearance of the birds and the periods of hibernation of the reptiles.

The average rainfall for the State is a little over 40 inches. This is well distributed throughout the year, droughts and floods, except in a few localities, being of rare occurrence. The least rainfall is recorded in the valley of the Big Sandy River, where the average precipitation is only about 38 inches; the greatest is along the southern boundary of the State where in certain



sections an average of over 50 inches is reached. The mean annual relative humidity in the Blue Grass is 72% (Lexington record) and the average wind velocity less than seven miles per hour, thus producing ideal climatic conditions for many forms of animal life.

It is a current and oft-quoted notion that climatic conditions are changing—that the seasons are different from those of former years and that "our winters are not what they used to be." Weather Bureau statistics do not bear out this idea. Apparently there has been little change in average seasonal temperatures within the memory of man; one simply remembers the unusual and forgets the usual. The squirrels of today probably have to make exactly the same provision for winter as did their ancestors in the days of Daniel Boone, and the bird which next year in his migration heralds the coming of spring in Kentucky, doubtless schedules his trip on about the same date as did his forefathers of years ago in their age-old pilgrimage.

#### SOILS

The interdependence of all forms of life has long been a fundamental premise of biologists. In the constant balancing of Nature, every form of life is dependent upon every other form for its existence. This is particularly true of animal life, since animals are, in the great struggle for food, for shelter, for protection and for mates, compelled to search for other living things to satisfy their requirements. The great desire of every wild animal is "to eat, and not be eaten," and the food of animals is always eventually some form of plant life, for even if the animal be carnivorous, its prey will likely be herbivorous, or will be dependent upon a grass or herb-eating form for its existence.

Plants, in their turn, are dependent upon the soil; soil conditions determine, more than any other factor, the type of vegetation, its extent, its vitality, and its abundance.

Hence the soil of a given region determines, more than might at first thought be suspected, not only the vegetation but the animal life of the country. The presence of certain plants means the presence of those insects which feed upon such plants; the abundance of these insects favors the existence of the insect



Fig. 11  
BY ROADSIDE AND STREAM  
An ideal spot in which to study the wild life in Kentucky

Photo by W. B. Allison

enemies—the insect-eating birds and toads; where the small birds and the toads are plentiful, the hawks, snakes, foxes, minks and weasels are sure to appear; these are followed in their turn by the larger animals, each seeking, in its own fashion, to profit by the abundance of its favorite food. Upset the balance, and immediately all the factors must be readjusted.

It is thus possible for the geologist to predict, with a remarkable degree of accuracy, the types of animal life which will be found in a given locality, because of his knowledge of the types of soils represented. Some geologists have shown\* that there is a close association between the conformation of the country and the type of the human inhabitants.

It will be found, therefore, that the distribution of animals throughout the State will be very intimately connected with the type of soil represented, a connection which is even more evident in the lower groups of animals, such as the insects, worms, crustaceans and molluscs, than in the vertebrates here discussed.

In the eastern mountains the soil is poor since the rock strata are chiefly sandstones and shales, the surface is much dissected and eroded, and much of the land stands "on end." The region has, however, a flora and a fauna, peculiarly and picturesquely its own. In describing typical mountain conditions Professor Miller says:\*\*

"The ridges with scant soil are covered with a forest growth of pine and chestnut and an undergrowth of huckleberry. The trailing arbutus covers the brows of the cliffs and the laurel ("ivy" of the mountaineer) roots itself in the bare faces of the cliffs themselves. In the deep moist hollows below, the rhododendron ("laurel" of the mountaineer) flourishes, and from these hollows the hemlocks (spruce pine) send up very close to the walls their long straight shafts. It is the home of numerous rattlesnakes and an occasional bear."

Here also is the home of many other forest-loving animals—raccoons, opossums, skunks, squirrels, and a wonderful host of birds. It is a region of joy to the zoologist and collector. Here too, in the mountain cabins, is to be found a hospitality seldom

\*Miller, A. M. *Geology of Kentucky*, 1919, pp. 190-193

\*\*Ibid. pp. 188-189.

encountered in less primitive regions. If the influence of the country's topography has been conducive to feuds and moonshining, as has been claimed, let it also be credited with fostering a spirit of welcome and friendliness toward the stranger which must be experienced to be appreciated. This same soil, rocky,



Fig. 12  
MOUNTAIN VEGETATION

Photo by W. R. Jilison

A winter scene showing typical floral and soil conditions. A primeval spot in the mountains

barren and unresponsive to the agriculturist, has nourished a race of fearless and democratic folk who know and love their mountains and are wonderfully well versed in Nature's teachings.

The soil of the "Knobs" is on the whole almost as poor as that of the mountains. As in the mountains the soil is formed largely from shale and is hard, close, washed-out, does not drain well, and is generally unproductive. The tops of the knobs support only a poor timber growth of chestnut and scrub oaks with occasional pine and hickory. The valleys between the knobs



and even the bottom lands where the streams traverse the region are also thin in soil and meager in vegetation. The region is, however, of zoological interest, since its location favors a number of animal forms not commonly found elsewhere.



Fig. 13      Photo by W. R. Hilson  
A MOUNTAIN CABIN  
A home of a true Anglo Saxon

The soil of the Blue Grass, formed largely from highly phosphatic limestones, is the richest in the State and is particularly adapted to the growth of Burley tobacco and blue-grass, the former of which has made the district world famous while the latter has given the name to the region. Here vegetation is richest and most luxuriant. The soil, especially in the so-called "Inner Blue Grass" of which Fayette County is the center, will support the widest variety of plant and animal life. Yet the Blue Grass is the least interesting part of Kentucky from the naturalist's viewpoint, since the farming is so intensive, the cultivation so clean, the population so dense, the highways so well-traveled, and the deforestation so complete, that with the exception of the birds—and even these are avoiding the region—practically all of the native wild animals have long since disappeared.

The Cavernous Limestone Area shows a rather wide variety of soils since it really includes several geological sub-regions. In the Waverly Formation the soil is poor, being practically the same as that of the knobs; in the cave region of the area, the soil which is formed over the limestone is distinguished by its reddish color and is mixed with chert; in the level region of Simpson and Trigg Counties the land is good and vegetation



Fig. 14      Photo by W. R. Hilson  
THE REFUGE OF THE FOX AND SKUNK  
Entrance to a cave on Pine Knob

is abundant; in the strip bordering the coal fields it is thin and poor. As has been noted, a portion of this region was formerly the treeless "Barrens," but it is now well wooded and much of it is uncultivated. Part of the region is rough and affords excellent haunts for the more timid of the wild mammals. Both red and gray foxes are found in this region and quail is still abundant.

The Western Coal Field is a rich zoological area. It is high and rough but the soil has not washed away and plant life is luxuriant. There is considerable timber in this region and

in the more thinly settled areas may be found an unusual proportion of the animals here recorded for the State.

The Purchase region has a soil which is a mixture of gravels, sands, clays and loams, rich and productive and rather unique in its flora. With these distinctive plant zones are associated forms of animal life not found in other parts of Kentucky. Much of the land is low, there is considerable water, and the aquatic and semiaquatic life is abundant.

#### DRAINAGE

Kentucky is well provided with rivers and the drainage is excellent. The principal rivers are the Tennessee, Cumberland, Tradewater, Green, Salt, Kentucky, Licking and Sandy. All of these have many branches and tributaries and all empty into the Ohio. All of Kentucky's rivers are characterized by their extremely tortuous courses, their deep cuts with high steep banks, and their navigability. These features are due to the way in which the rivers have cut deep channels as the land surface has risen during geological ages. The result is that the gorges are often over 400 feet deep between almost perpendicular walls of rock, giving a scenic effect that is unsurpassed. The lack of rapids and falls and the winding courses of the streams, which decreases their fall per mile, is conducive to water transportation so that Kentucky probably has more actual miles of navigable streams than any other State in the Union. In addition to the streams within the State, the northern and western boundaries are formed by the Ohio and Mississippi Rivers, giving a very large mileage of river frontage.

The river valleys are *par excellence* the regions for birds. The writer has counted twenty-two different species of birds within less than that many minutes on the banks of the Kentucky River in Anderson County.

#### BODIES OF WATER

Kentucky has no lakes within its own borders. The excellent drainage throughout the State has left no bodies of water of sufficient size to deserve the name, but the northern end of Reelfoot Lake in Western Tennessee extends just far

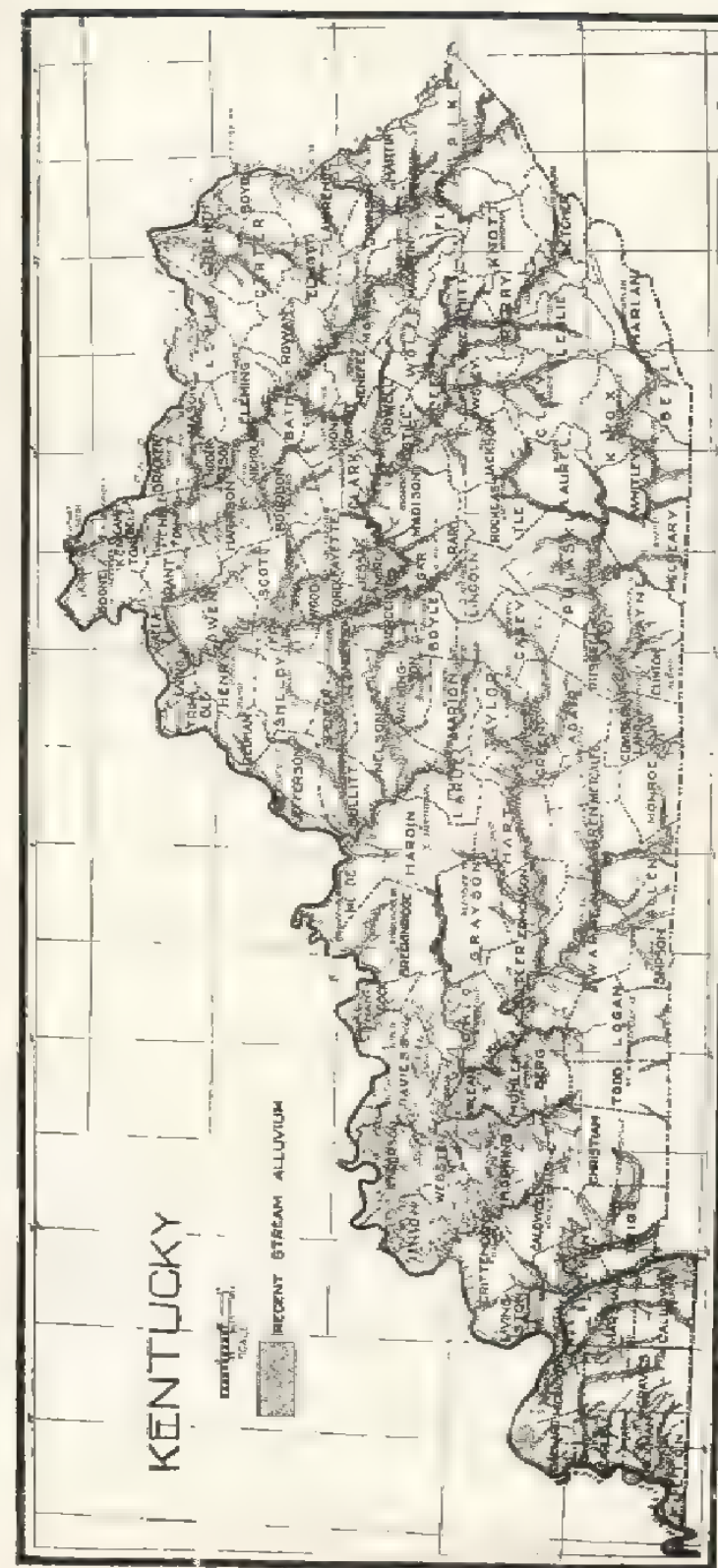


Fig. 15  
DRAINAGE MAP  
Showing river valleys and recent alluvium

Map by A. M. Miller

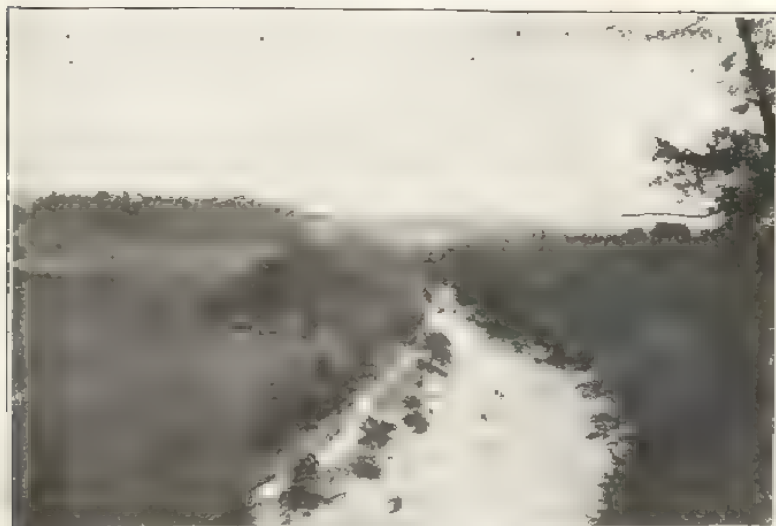


FIG. 16 Photo by W. R. Johnson

## A KENTUCKY RIVER VALLEY

A region of par excellence for birds. Winding stream with precipitous cliffs and well-wooded banks in Franklin County

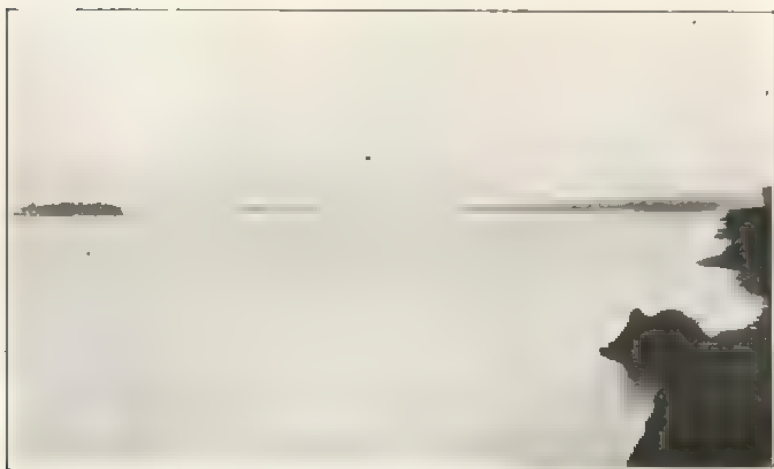


FIG. 17 Photo by W. R. Johnson

## A GOOD STRETCH OF WATER

Mouth of the Ohio River near Wickliffe, Ballard County

enough over the Kentucky line to prevent the State from being absolutely lakeless.

Neither are there any great swamps in the State. Part of the Purchase region is low and presents a somewhat marshy appearance and in many parts of the State ponds are found in considerable numbers but the typical swamp land, so common farther South, is lacking.

As a result of these conditions, Kentucky is weak in the aquatic and semiaquatic species of birds and reptiles as will be noted from the lists presented in this report.

## CAVES

The largest and most extensive caves in the United States and perhaps in the world are found in Kentucky. The most noted of these is doubtless the famous Mammoth Cave in Edmonson County which has been featured for years for its size and for the beauty of certain of its passages. There are many other caves in the same part of the State, however, which are equally beautiful and in some cases equally extensive, although not so well known. Of these, the Crystal Cave, Onyx Cave, Colossal Cavern, Horse Cave, and Grand Cave are of great beauty and considerable extent. In fact, none of these caves have been entirely explored and their extent is problematical. Most of them extend for miles under the surface of the earth—passage after passage, chamber after chamber, with branches in many directions, offering rare displays of stalactites and stalagmites and dazzling surfaces of crystal and ornamented rock.

The caves are not limited, however, to the Carboniferous Plateau. In practically all parts of the State, wherever limestone of any thickness and purity occurs near the surface, caverns are to be found. There are many caves in the Blue Grass, some of considerable extent; there are large subterranean caverns in Clark, Carter, Wayne, Caldwell and Madison Counties, besides thousands of smaller caves and "sinks" (which are often the entrances to caves) scattered all over the State. Most of these caves have been formed by the dissolving out of the beds of soluble limestones by underground waters, leaving a roof of



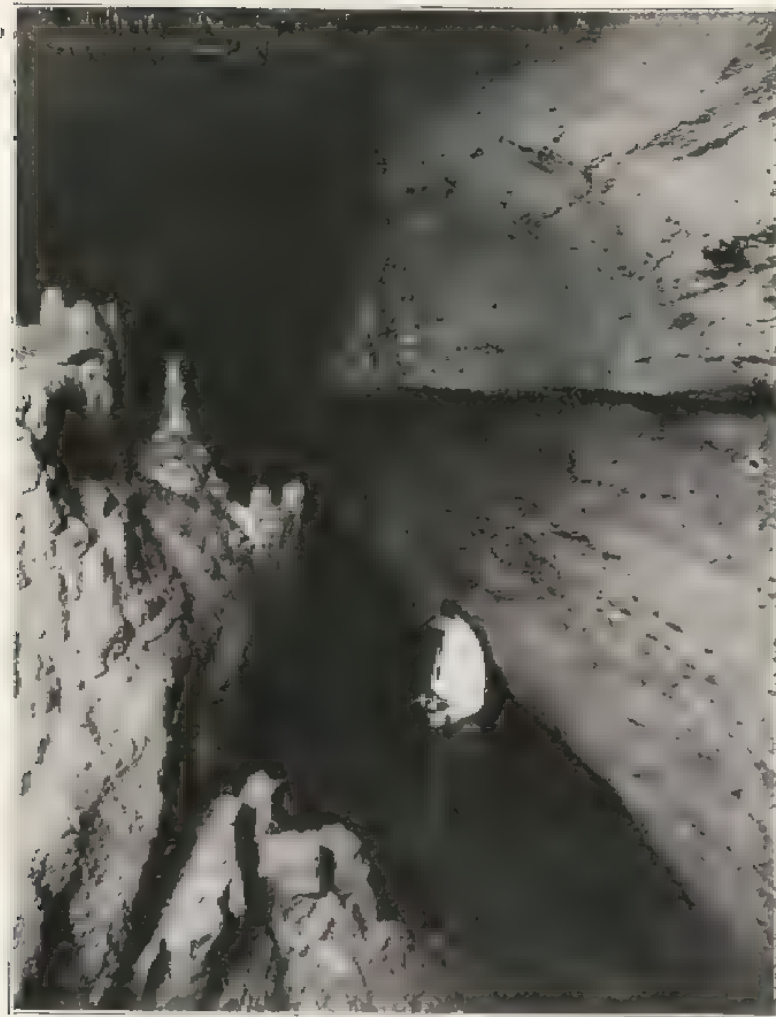


FIG. 18  
IN A KENTUCKY CAVE

A view in the Phelps Cave near Lexington, showing characteristic cavernous formation.

some harder material such as sandstone, as in the case of the Mammoth Cave Area.

These caves, large and small, are, and always have been

the homes of animals. They are inhabited today by foxes, coons, skunks, and bats, and are used as places of hibernation by snakes, lizards, and hosts of lower forms; in former years the bears and wolves made them their dens and dragged the carcasses of their prey into their gloomy recesses to be devoured. Today the cattle seek the cool mouths of the caves to escape the heat and flies; a hundred or more years ago the buffalo used them for the same purpose as is mutely testified by their bones. In fact the caves have a very interesting fauna of their own, consisting of the blind fish, blind crickets, blind crayfish, peculiar spiders and distinct species of salamanders which are found in large numbers far underground but never on the surface.

These caves hold many a secret of bygone and even pre-historic days. It doubtless happened, in many instances, that a cave, sheltering many animal inhabitants, collapsed, the roof of the entrance giving way, burying its victims under tons of earth and rock, and completely destroying all evidences of the cave's existence. Here, protected from the influences of air and water, and in some cases even becoming covered with mineral deposits, the bones are preserved as valuable records of ancient fauna. In one such cave, opened again by accident, on the Breck Smith farm about eight miles west of Lexington, have been discovered the bones of coons, foxes, wolves, groundhogs, skunks, a bear, a deer, a buffalo, and even a human being—probably an Indian. Surely enough material for romance and tragedy! Plenty of historical and recent records prove that the contents of caves are well worth careful scientific investigation.

Closely associated with the caves are the "rock-houses" or great over-hanging ledges of rock which are found in many parts of the State and which like the caves afford animals shelter. Attention has been called to the fact\* that in just such situations in France and Spain have been found the most satisfactory evidences of the existence of primitive man during the Glacial Period and it has been pointed out that Kentucky occupies in this country the same position relative to the southern ice limit as do the above-mentioned countries in Europe, thus

\*Miller A. M. *Geology of Kentucky*, 1919, pp. 209-210

suggesting that similar archaeological data might be obtained by a study of our caves.

This suggestion has been borne out, in fact, by recent investigations made by the University of Kentucky. In the summer

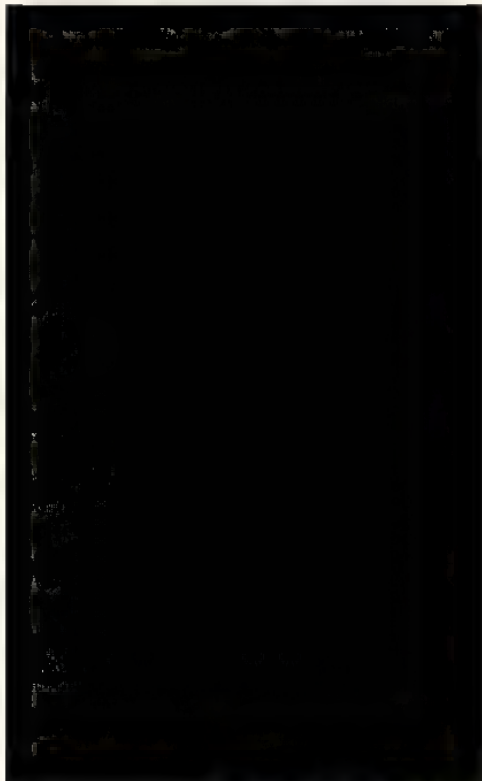


Photo by A. S. Heath

Fig. 19

AN EARLY KENTUCKIAN  
Skeleton of an ancient Indian found in  
Hines Cave, Wayne County, Ken-  
tucky

of 1922 the Hines Cave in Wayne County yielded evidences of very ancient occupation by man. Numerous ancient skeletons were unearthed, some of which were extremely primitive. The

artifacts discovered with these skeletons, some of which were ten feet below an immense stalagmite which measured eight feet in diameter at the base, proved that the cave had been inhabited for a very great length of time.

In April, 1923, Miss Frances Johnson, a fourteen year old girl at the Pine Mountain Settlement School in Harlan County,



Photo by A. M. Miller

A YOUNG ARCHAEOLOGIST

Miss Frances Johnson, a young girl at the Pine Mountain Settlement School, with two primitive skeletons of Indians which she discovered in Harlan County.

discovered an ancient grave under a cliff which yielded nine Indian skeletons of great age and unusual archaeological interest.

Certainly Kentucky is neglecting a great opportunity to contribute to this field of science. It would be most unfortunate if it remains for European explorers to come to this State and bring to light important data which have been for years within our reach, but for which we have neglected even to search.



CHAPTER II.  
FAUNAL HISTORY OF KENTUCKY  
ANCIENT MARINE LIFE

Millions of years ago that part of the earth which is now the State of Kentucky was at the bottom of an ancient sea. The first animals, therefore, of this region, were the hordes of prehistoric aquatic forms which swarmed in the waters of the ocean—creatures long since extinct but which at that time

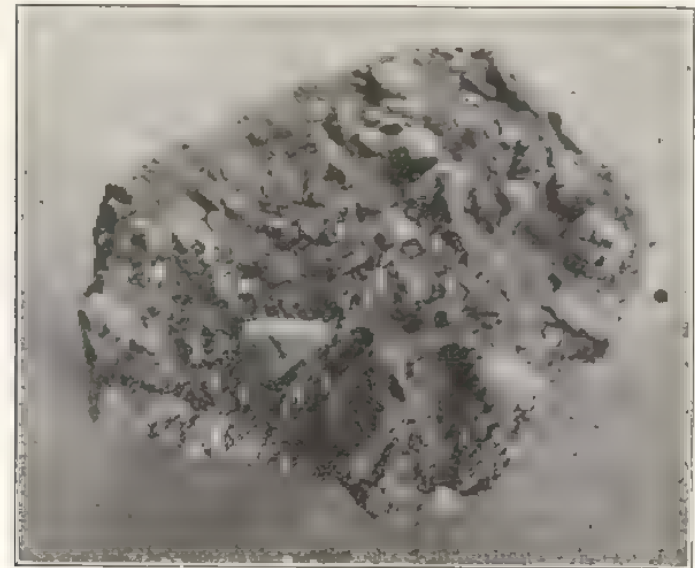


Fig. 21 Photo by A. M. Kites

WHEN KENTUCKY WAS UNDER WATER  
A piece of Kentucky limestone showing the remains of corals  
and crinoids of ancient days

existed in countless multitudes as evidenced by the fossils which characterize the rocks formed during those ages. The most abundant of these animals as represented, for example, in Kentucky limestones, were, at different times, crinoids, corals, bryozoans, brachiopods and molluscs. So numerous were these ani-

mals that there is hardly a county in Kentucky in which their fossils may not be found abundantly on or near the surface of the earth today. It is difficult to appreciate the immense period of time throughout which these conditions existed. During these ancient ages this part of the American continent was invaded by the sea from two directions—from the north as an extension of the Hudson Bay region, and from the south as the waters of the Gulf of Mexico pushed their way up the great central valley. Apparently Kentucky was at periods covered by an intermingling of the two oceans at the same time, thus causing an overlapping of northern and southern marine faunas. This we know from the records of the rocks.

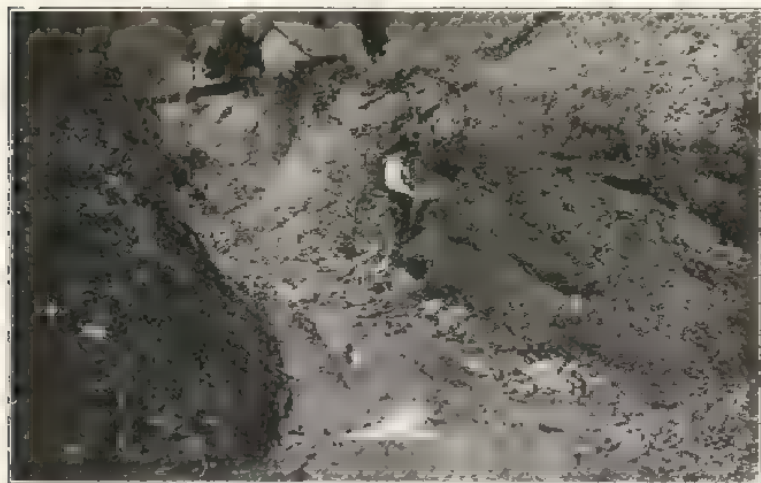


FIG. 2. Photo by W. J. Johnson  
SEARCHING FOR THE REMAINS OF PREHISTORIC ANIMALS  
A remarkable fossil bed in the coal measures of Floyd County

As time went on, higher forms of life appeared in these ancient seas. Strange armored fishes, primordial sharks, and giant bony fishes, each in their turn were rulers of the deep. During this early period, also, the ocean bottom did not remain at a stationary level but was subject to foldings and overlappings, elevations and depressions, so that at times parts of the ocean floor would be lifted above the surface of the water only

to be submerged again as further changes in the position of the rock masses occurred.

#### BEGINNINGS OF LAND LIFE

The time finally came (at about the beginning of the Upper Carboniferous) when all of that part of Kentucky east of what is now the Tennessee River was lifted above the water for the last time and became a more or less permanent land mass. Geologists estimate that this was about 17,000,000 years ago, but the approximate periods in years for the various geological eras is still a matter of much dispute.\* That part of the State which we have called the "Purchase" was still under water for ten or twelve million years longer as the head of an embayment of the ancient Gulf of Mexico,† and still retained its marine life.

With the exposure of the land, the amphibian forms of life probably appeared—the early types of newts and salamanders, large headed, short-bodied creatures which were eventually to give way to the later frogs and toads and the modern salamanders. Conditions were apparently such, however, that practically no evidences of these early amphibians were preserved in this region although they have been found in the coal measures of Pennsylvania and Ohio. For it was during the Age of Amphibians (Carboniferous) that the great masses of plant life which had appeared on the surface of the earth were fossilized to form our coal beds.

After the Age of Amphibians there are many pages missing from the book of Nature so far as the record of the animal life of Kentucky is concerned. We have practically no evidence as to the faunal conditions here during the eight or ten millions of years occupied by the Mesozoic. If we are to judge by other sections of the North American continent during this time, the land animals appeared with increasing rapidity. The ancient reptiles—some fish-like, some bird like, some small and active, others clumsy and slow, like the giant dinosaurs—were distributed in those days from the Connecticut Valley to the Wes-

\*Some authorities place the end of the Lower Carboniferous (Mississippian) as far back as 200,000,000 years ago.

†Professor Miller believes that this region was finally raised above sea level during the Tertiary. *Geology of Kentucky*, p. 5.



tern Plains. They may have been equally abundant in Kentucky but we have no records of their existence here. Equally meager is our knowledge of the first bird and mammalian life of this region. On account of the fact that most of the Mesozoic formations are not present in Kentucky, all evidences of these forms have been destroyed but we have no reason to doubt but that the animals were present here as elsewhere during that period.

#### PREHISTORIC MAMMALS

It is not until comparatively recent geologic times (late Quaternary) that we are again able to take up in any detail the history of the faunal life of the State, but when it appears (Pleistocene) the record is full and varied. We find evidence of abundant plant and animal life, of natural conditions not greatly unlike those of today, and of a fascinating distribution of early forms. During part of this period (Glacial Age) the great ice sheets had come down from the north, sweeping all life before them. These enormous masses of ice did not, however, disturb Kentucky.\* They melted along the Ohio River region and then slowly disappeared northward.

This period, immediately following the Ice Age, must have witnessed the most marvelous and interesting assemblage of animals ever found in Kentucky. The northern forms which had been driven southward by the advancing ice,\*\* the animals native to the State, animals lured to the region by the salt deposits,† and carnivores attracted by the abundance of their prey, all were struggling for existence at the edge of the vegetation. There is no lack of evidence regarding these animals. Bones of the mammoth and of the tapir, bones and teeth of the mastodon, and bones, impressions and prints of many other animals most of which are extinct and none of which are native of this region have been found in abundance in Kentucky. In fact, the original description of one of the mastodons (*M.*

\*Glacial deposits are recognized along a narrow strip from Campbell to Jefferson County.

\*\*In a cave on the Breck Smith farm, 14 miles from Lexington, has been found a bone which some authorities think is that of a polar bear.

†Herbivorous animals which require salt as a part of their food

*ohioticus*) was written from bones and teeth of this prehistoric beast—which was making his last stand on earth at about that time—found at Big Bone Lick in Boone County. This locality, as has been mentioned before, is of much interest zoologically and historically. Tons of bones of extinct animals have been excavated from around these salt springs and licks, where for centuries they were trampled into the swampy soil.\* Not only the animals, but the Indians and the early settlers came to these licks for salt. The immense number of "big bones" which the latter found of course suggested the name for the locality. As early as 1739 a French traveler, de Longueil, remarked on this interesting collection of bones, and in 1751 the explorer Christopher Gist brought away from the place a mastodon's tooth.

Thus for awhile the later prehistoric mammals roamed over the hills and through the forests and swamps of Kentucky, leaving their skeletons as mute witness of their presence. The species of Pleistocene mammals which have actually been reported from Kentucky with the locality in which each has been found are as follows:

*Edentata.* *Megalonyx jeffersonii* Des. (*Megalonyx*) Big Bone Lick; Henderson.

*Mylodon harlani* Owen (*Mylodon*) Big Bone Lick; Blue Lick.

*Perissodactyla.* *Equis complicatus* Leidy (Horse) Big Bone Lick.

*Tapirus sinensis* Owen (*Tapir*) McConells Run, Scott Co.; Yarnellton Station, Fayette Co.

*Artiodactyla.* *Platygonus compressus* LeC. (Peccary) Blue Lick; Crooked Creek, Rockcastle Co.

*Cervus canadensis* Erxl. (Elk) Big Bone Lick; Wayne Co.†

*Cervalces scotti* Lyd. (Moose) Big Bone Lick.

*Rangifer tarandus* (Caribou) Big Bone Lick.

*Bootherium bombifrons* (Musk-Ox) Big Bone Lick.

*Bison antiquus* Leidy (Bison) Big Bone Lick.

*Bison latifrons* Leidy (Bison) Big Bone Lick.

\*Many complete skeletons of mastodons some of which came from Big Bone Lick, are preserved in the great museums of this country, but we have none in Kentucky.

- Proboscidea.* *Mammot americanum* Kerr (Mastodon) Big Bone Lick; Blue Lick.  
*Elephas primigenius* Blum. (Mammoth) Big Bone Lick; Blue Lick.  
*Elephas columbi* Falc. (Mammoth) Big Bone Lick.  
*Rodentia.* *Castoroides ohioensis* Foster (Giant Beaver) Black Hills.  
*Carnivora.* *Ursus americanus* Pall. (Bear) Big Bone Lick; Phelps Cave. (?)

At about this time, or a little later, man must have appeared upon the scene—the first man in Kentucky. What he looked like, or where he came from, we do not know; perhaps he had descended from an Asiatic race which centuries before had crossed into this country by way of the Behring Straits while there was still a land bridge connecting the two continents in that region. At least, some geologists believe that man was contemporary with the mastodon at this time and we know that even then the mastodon was fast disappearing. There is yet much to be learned of primitive man in Central North America and it has been suggested in the preceding chapter that it will be well worth while to make careful examination of our caves and rockhouses in Kentucky for evidence on this subject.

#### PRE-COLONIAL TIMES

Again we come to a long hiatus in our faunal history. From Pleistocene times until the discovery of America we can only speculate as to the animal life of this region. We know that the mastodon and mammoth disappeared as did the sabre-toothed tiger, the primitive hyenas, the archaic foxes, the prehistoric horses, the ancient bears, and other hitherto dominant forms in other portions of North America. These animals gave way to the bison, the elk, the modern wolves and bears, the panthers and the rodents which were found here by the first settlers. But thousands of years elapsed during the process. Meanwhile the climate was changing. The ice mass receded, the erosion of the land surface went on rapidly, the configuration of the country became about what it is today, and altogether conditions became about as they are at the present time. Animal

life undoubtedly increased enormously but no pen recorded the events.

The same chasm which we cannot bridge in the faunal record appears in the record of man in this region. In other parts of the New World there are most interesting evidences of man's occupancy. The Incas in Peru and the Aztecs in Mexico had built up marvelous civilizations; even the tribes in the south-western parts of this country had established settlements the remains of which are now attracting much attention; but in Kentucky we find no such evidence of early man. There is indeed no evidence to indicate that there were ever in this region any distinct races or tribes other than the ancestors of the Indians which were found here by the white man. Apparently even the later Indian tribes made no permanent settlements in this State. That the Indians hunted over this region in large numbers there is no doubt—in all parts of the State there are to be found Indian mounds, graves, old earthworks, various "relics" in the shape of arrow-heads, axes, and various flints—but nothing to show a long continued occupation of any one site. The region was probably a favorite hunting ground, rich in game and easy of access, which made it a sort of "no man's land," jealously guarded by all tribes against any who might desire to claim it as their own. That the region abounded in game—buffalo, elk, deer, bear, birds and fish—and that it was a paradise for the Indian hunter we know from the accounts of the early settlers. Meanwhile the horse, introduced to this continent by the white man from Europe, had been domesticated by the Indian and some had become wild to become a part of our native fauna. And with this condition in the animal life of the State we may begin the recorded history.

#### ANIMALS FOUND BY THE FIRST SETTLERS

The early settlers were naturally more interested in those animals which could be used as food and in those which threatened their lives, than in the multitudes of smaller forms about them which were of no great economic importance, and so in the accounts of the pioneers we find constant mention of the buffalo, the elk, the deer, the coon, the squirrel and the wild turkey on the one hand, and of the bear, the panther, the wolf



and the rattlesnake on the other, to the exclusion of many of the other animals of which we would much like to know. A compilation of the writings of these early days in Kentucky as regards the part played by the wild animals in the lives of the first settlers would make a fascinating volume, for the life of the day was the life of the wilderness, the tales were tales of hunting, the outstanding figure of the period is the woodsman with his long rifle and his coonskin cap; scenes and personages all linked in a picturesque and romantic story to which the zoologist is constantly attracted, but which can have no place in this report.

A digest of these early records shows, however, that certain species were abundant which have since disappeared and that on the other hand species which we now have and which it seems would have been noticed if present, are not mentioned by any of the first inhabitants. Of the animals in the former group in which we are most interested, the following are worthy of special attention:

#### THE BUFFALO (*Bison bison* LINN.)

The fate of the American bison in the United States is one of the great tragedies in our animal life. This magnificent beast which once roamed the central and western plains of North America in enormous herds is now almost extinct. Buffaloes were very abundant on the western plains up to about the year 1870. From that date, however, the ruthless slaughter of the animals reduced the number so rapidly that in 1903 it was estimated that only about 600 wild individuals and 100 captive specimens still existed. Since that time attempts which have been made to preserve them have resulted in some increase in the number but it is probably too late now to expect to establish them again as a native wild animal.

To the pioneers, the bison was commonly known as the "buffalo" and the history of the western migrations is rich in accounts of the hunting of these animals both by the Indian and by the white man. In Kentucky the bison was apparently very common and a few records will suffice to give an idea of their abundance.

When Daniel Boone left his "family and peaceable habita-

tion on the Yadkin River, in North Carolina, the first of May, 1769, to wander through the wilderness of America, in quest of the country of Kentucke" he writes that upon reaching this State

"We found every where abundance of wild beasts of all sorts, through this vast forest. The buffaloes were more frequent than I have seen cattle in the settlements, . . . . sometimes we saw hundreds in a drove, and the numbers about the salt springs were amazing."\*

Boone also states that during the severe winter of 1780 and 1781, the inhabitants of Kentucky "lived chiefly on the flesh of the buffalo."

A map published at Amsterdam about 1721 by John Sinex has the legend "The place where the Illinois hunt cows" on that portion of Kentucky later called the "Barrens." This map appears to be a reproduction of an earlier one in which the legends are in French. On the French map the word here rendered "cows" appears as "beufs" and evidently refers to the buffalo.

In an account of the travels of Simon Kenton, given by M'Clung, the following reference to the buffalo is made:

"Kenton, with two companions, set out from Cabin Creek, a few miles above Maysville, apparently about 1773 or 1774, to explore the neighboring country. In a short time they reached the vicinity of May's Lick, where they fell in with the great buffalo trace, which in a few hours brought them to the Lower Blue Lick. The flats upon each side of the river were crowded with immense herds of buffalo, that had come down from the interior for the sake of salt; and a number of elk were seen upon the bare ridges which surround the springs. . . . After remaining a few days at the lick, and killing an immense number of deer and buffalo, they crossed the Licking, and passing through the present counties of Scott, Fayette, Woodford, Clark, Montgomery and Bath, where, falling in with another buffalo trace, it conducted them to the Upper Blue Lick, where they again beheld elk and buffalo in immense numbers.\*\*

\*Wilson, John. Discovery, Settlement, and Present State of Kentucky, 1781, pp. 51.

\*\*McClung. Sketch of Simon Kenton. In Western Adventures, p. 86.

It should be noted that even in these early days, when herds of buffalo were not uncommon, the writers speak of the "immense" numbers in Kentucky. Such statements are borne out by Filson, the historian, who wrote in 1784: "I have heard a hunter assert, he saw above one thousand buffaloes at the Blue Licks at once" and in speaking further of the salt licks of Kentucky he states:

"To these the cattle repair, and reduce high hills rather to valleys than plains. The amazing herds of buffaloes which resort thither, by their size and numbers, fill the traveler with amazement and terror, especially when he beholds the prodigious roads they have made from all quarters, as if leading to some populous city; the vast space of land around these springs desolated as if by a ravaging enemy, and hills reduced to plains."\*\*

Cumming, writing in 1810, states that

"these licks were much frequented by buffaloes and deer.....it is only fourteen or fifteen years since no other except buffalo or bear meat was used by the inhabitants of this country."

The same author claims that he was told by Captain Waller that

"Buffaloes, bears, and deer were so plenty in the country, even long after it began to be generally settled, and ceased to be frequented as a hunting-ground by the Indians, that little or no bread was used, but that even the children were fed on game, the facility of gaining which prevented the progress of agriculture."\*\*\*

It is interesting to note that among the first attempts to domesticate the buffalo were those made in Kentucky by Mr. Robert Wickliffe, of Lexington,† about 1810-1840 who succeeded in producing crosses with buffaloes and cows, and by Colonel George C. Thompson of Shawnee Springs, Mercer County, about 1825, who kept a herd for about fifty years.

The last wild buffalo in Kentucky were probably those in the western part of the State about one hundred years ago

\*Filson, John. Discovery, Settlement, and Present State of Kentucky, 1784, pp. 27-28.

\*\*Cumming, John. Sketches of a Tour to the Western Country, 1810, pp. 155-156.

†The Wickliffe Place was north of the present reservoir on the Richmond Pike, about two miles southeast of Lexington.

There is a buffalo trail in Hart County leading to the Green River which rather well authenticated tradition states was used by the animals as late as 1820. Doubtless there were a few wandering individuals in this part of the State for a few years after that date.

In the Breck Smith cave near Lexington, mentioned in a preceding paragraph, was found the skull and other bones of the buffalo, together with parts of a human skeleton—probably that of an Indian.



FIG. 23  
SKULL OF BISON  
Found in the Breck Smith cave near Lexington

#### THE ELK (*Cervus canadensis* ERX)

This noble animal, erroneously called "elk" in this country, is really the *wapiti* and is closely related to the famous great stag of Europe. It is mentioned by the pioneer settlers, along with the buffalo as a source of meat and leather and a most desirable form of game for the hunter. In fact the elk has always been regarded as *par excellence* the game mammal of the United States and the majesty and splendor of the "stag



at bay" with flashing eye and threatening antlers has often been described in song and story. The elk is the second largest member of the deer group on this continent, being surpassed in size and weight only by the moose.

The elk probably disappeared from Kentucky before the buffalo; we find no reliable references which record it in the State within the last hundred years. In the early days it was commonly seen together with buffalo and deer as quoted in preceding paragraphs.

As in the case of the buffalo, the disappearance of the elk is much to be deplored for this animal is easily domesticated, breeds well in captivity and might have been saved as a splendid type of our North American ruminants.

One of the best evidences of the abundance of the elk in Kentucky is the number of geographical names which commemorate the animal. There is scarcely a county in the State which does not have an Elkhorn, Elk creek, Elk ford, Elk fork, or Elkton.

Bones of the elk are commonly found in the kitchen-middens and in the old camp-fire deposits of the early Indians. These, together with the bones of deer and bear show that these three animals were all used as food by the aborigines.

#### THE PANTHER (*Felis concolor* LINN.)

This animal, the largest of the North American cats, was the terror of the first settlers and is the theme of many of the blood-curdling stories of pioneer days. It has been variously called the American panther, the American lion, the "painter," the cougar, and the puma, the latter name being probably the most desirable.

The puma is a powerful beast, sometimes measuring eight feet in length from the nose to the tip of the tail, and weighing 150 pounds. The body is long and slender, of a beautiful uniform tawny color (which suggests the specific name), with a small head, short legs, and powerful feet and claws. It is credited with being able to leap forty feet on level ground and a jump of sixty feet from a ledge twenty feet above the level

has been measured.\* It was without doubt the "killer" of the forest and fed on almost all animals which came within its range. Its ferocity is traditional and it is said to only drink the blood of its victims when food is abundant.\*\* Also, like most cats, it apparently often killed for the pure joy of slaughter and instances are recorded of the killing of fifty sheep in one night by a single puma. With such a reputation, and with habits entirely nocturnal and stealthy, it is little wonder that it was a constant source of fear to the early settlers.

As a result of this fear, a series of superstitions and legends grew up about the animal, many of which are entirely without scientific foundation. One of the commonest of these fallacies was the supposed bravery of the puma and its proneness to attack man; the fact seems to be that the puma is an extremely cowardly beast and unless wounded or cornered cannot be induced to fight. Another tale often found in the stories of the wilderness had to do with the unearthly screams of the panther. In commenting on this, Professor Herrick says:

"Who has not heard of the piercing cries and startling screams of the panther? Who has listened, about the evening camp-fire, to the tales of hunters and woodsmen, but has felt his blood run cold, and his hat tighten on his head, as the earnest speaker, perhaps in a whisper, and uninterrupted save by the spluttering of the fire, told of the time when, alone in the solitudes of the deep forest, and at the dead of night, he was suddenly awakened by a piercing scream that burst upon his weary ears. It seemed like the shriek of a woman in distress, or the pitiful wail of a lost child. Half asleep, quite bewildered, he starts to his feet to render assistance, when the glaring eye balls of a fierce cougar met his horrified gaze and acquainted him with the nature of his unwelcome guest!

An attack of indigestion, the cry of a loon, or the screech of an owl, a piece of phosphorescent wood and a very moderate imagination, are all that are necessary, in the way of material and connections, to build up a thrilling tale of this description. Indeed, the writer once had a bit of personal experience in this line that is not yet forgotten.

\*Merriam, C. H. Trans. Linn. Soc. N. Y. 1884.

\*\*This habit has been proven by post mortem examination.

In conversing with honest hunters upon this point, it has been my uniform experience to find that those who have had most to do with panthers are most skeptical in regard to their cries."\*

In like manner the size of the panther has been greatly exaggerated and specimens thirteen feet in length (!) have been described; the fact is that a very large male may attain a few inches over eight feet and Jordan gives the average length as 90 inches. Tales are also told of the panther leaping from secret hiding places upon its victim and throwing the animal (even a deer or a sheep) over its shoulder to carry it away; no such actions have ever been actually recorded and its common method of "carrying" food seems to be to drag it along the ground. Thus fact and fancy have been sadly intermingled, and the tales have grown with the telling, so that many of the "painter" stories of our grandfathers must be taken *cum grano salis*.

The panther persisted in Kentucky until comparatively recent times. Professor Garman, writing in 1894, states:

"From accounts given me by intelligent men who have long been familiar with the mountainous districts of Kentucky and West Virginia, I am satisfied that this species has existed in the State within the past fifty years."\*\*

#### THE BEAR (*Ursus americanus* PALLAS)

The only bear found in Kentucky was the species variously known as the black bear, brown bear or cinnamon bear.† On account of the fact that bears vary in appearance within a species more than almost any other mammal, it was natural that the early hunters should suppose that several species were represented in the State, a supposition which is reflected in their accounts. The fact is that even in the case of two cubs of the same parents, one may be black and the other light brown. Bears were extremely plentiful in Kentucky before 1800 but became rapidly scarcer during the next fifty years; at the present time

\*Herrick, C. L. Mammals of Minnesota, 1892, p. 70.

\*\*Garman, H. Vertebrate animals of Kentucky, 1894, p. 2.

†Bones of a bear found in the Phelps cave near Lexington are believed to be those of a Pleistocene species.

they may be found only in a few sparsely settled localities and are very rarely seen.

The bear was no mean antagonist of the pioneer hunter who was dependent on the old "muzzle-loader" and the sheath-knife for weapons. The size, strength, weight and endurance of the animal, and his speed in action despite his apparent clumsiness and deceptive lumbering gait, made him a savage foe. Nevertheless, the bear was much desired as food and the skins were highly prized, so that no opportunity was lost of securing these welcome additions to the contents of the log cabin. Later, when the settlements boasted farm animals, the bear made himself a nuisance by his raids on the pig pens. In the stories of early days, the commonest references to the bear fall under four heads—the delicious roasts of bear-meat set before the hungry traveler, the great warm skins on the floors and rude beds, the nocturnal attacks of bears on stock, and the peculiar superstitions which the Indians had for this animal, superstitions which are mentioned time and again in Indian legends from all parts of the United States.

#### THE WOLF (*Canis nubilus* SAY)

Wolves were very abundant in Kentucky in early days but seemed to disappear more rapidly with the establishment of settlements than any of the other wild animals. They were apparently not greatly feared and are generally mentioned by the early writers in terms of disdain—"cowardly, skulking beasts"—which were occasionally a menace to sheep, were often anathematized for their howlings, and were sometimes hunted for the sake of their skins. They usually traveled in packs and generally stayed close to timber but when pressed by hunger would venture some distance from their accustomed haunts and would sometimes attack man.

Apparently in 1809 wolves had ceased to be a serious menace in Kentucky for on February 1 of that year the State Legislature passed a law which read:

"Every act or part thereof that hitherto authorized a reward for the killing of wolves shall be and the same are hereby repealed, any law to the contrary notwithstanding."



However, on January 26, 1810, an act was passed which permitted the various counties as they saw fit to establish levies to pay bounties for the killing of wolves at the rate of \$1.50 for each wolf killed over six months old.\*

One cause of their rather rapid disappearance was probably the cutting off of the forests. German reports them in 1894 as "not common" \*\* and it is doubtful whether they are to be found at all in the State at the present time.

The evidence is not conclusive that the wolf of Kentucky was the *Canis lupus* Linn. as claimed by many writers. It seems more probable that the species was *C. nubilus* Say as recorded above.

#### THE BEAVER (*Castor fiber* LINN.)

The beaver was probably never very abundant in Kentucky but it was occasionally mentioned by the pioneers and its name persists in numerous "Beaver Dams" and "Beaver Creeks" throughout the State.

This animal, the largest of the North American rodents, always attracted attention by its wonderful architectural ability and interesting social habits. The woodsman marveled at its skill in felling trees, the riverman remarked at the patience and industry shown in the construction of the dams and lodges, and the hunter was aware of its cleverness in warning its companions of his approach. The peculiarities of the life history of these animals and the details of the construction of their various types of burrows and habitations have always been interesting subjects for study by the naturalist.

The beaver was easily trapped and its fur was once a staple commodity, the skins being used in parts of Kentucky as a sort of currency by the trappers and Indians.

It did some damage to timber by cutting young trees and eating the bark of others, especially the birch, sycamore and willow, but it was never spoken of as a serious pest.

We can find no record of its having been seen in Kentucky within the past twenty years.

\*Acts of Kentucky Legislature 1809 and 1810

\*\*Garman, H. Vertebrate animals of Kentucky, 1894, p. 3

#### BIRDS

The birds most commonly mentioned in pioneer days were those which were killed for food, particularly the wild turkey, quail, partridges, grouse, "squabs," and doves.

The wild turkey, quail and doves are still with us, although the former is getting very scarce; the squabs were doubtless the young of the passenger pigeon which was very abundant, but is now probably extinct; the term "partridge" and "grouse" were apparently used very loosely and we cannot be sure as to the species to which they referred. It seems that the name "partridge" was often applied to the quail, and indeed it is



FIG. 24  
A REMINDER OF EARLY DAYS  
The grouse, formerly abundant in this State

still so used in many parts of the State. The term "grouse" was also indiscriminately applied to the quail, various partridges, and the prairie chicken, although there is no doubt, from some of the more detailed accounts that the true ruffed grouse was found in the Kentucky forests as it still is in some of the wilder regions. Probably the quail (Bob-White) and the ruffed grouse (or "ruffed" grouse) in Central and Eastern Kentucky, and the prairie chicken in the western part of the State, were the birds to which most of the accounts refer.

Hawks and owls were often mentioned in early records but we can not be sure of the species except in such accounts as those of Audubon in which they are specifically indicated.

Of the other birds to which reference is made by early travelers, the majority, such as the crows, buzzards, and jays, are still with us, but the beautiful little Carolina paraquet which once ranged as far north as the Great Lakes, seems to have been completely exterminated in this State.

Examination of the kitchen-middens, outside caves and rock-houses in Kentucky indicates that the wild turkey was a favorite article of food with the Indians.

### CHAPTER III.

#### PRESENT FAUNA OF THE STATE

##### ANIMALS REPRESENTED

Kentucky has perhaps as varied, although probably not as abundant a fauna as any state east of the Mississippi River at the present time.

The mountainous regions of the eastern part of the State are comparable to the similar regions in West Virginia, Virginia, North Carolina and Eastern Tennessee, and have about the same animal life: here are still to be found deer, wild-cats, wild turkey and an occasional bear. The Purchase region has many of the species found in the more southern states; the moccasin lingers along its streams, the wood-duck nests in its marshes, and the pileated woodpecker drums in its forests. In the western part of the State are occasionally found species not usually seen east of the Mississippi River, such as the prairie chicken and some western snakes. The northern counties contain many forms more common to Ohio, Indiana and Illinois.

As a bird region, Kentucky is unsurpassed in the variety and abundance of its species, since it is on one of the great migration routes and because it offers a tempting diversity of physical conditions for food and nesting sites.

The aquatic life of the State is also extremely rich, although scientific investigation has been made of only a few groups. Professor Garman lists 146 species of fish as actually found in our waters\* and mentions a dozen or more others which probably occur here—an imposing list for an inland state without a lake in its boundaries. This group is particularly interesting because of the remarkable blind fish found in the Kentucky caves.

There are probably no regions in the United States richer in fresh-water molluscs than the Ohio and Mississippi Rivers in the Kentucky region and their tributaries in this State. Some

\*Garman, H. Vertebrate animals of Kentucky. 1894 pp. 39-52



of the most interesting and remarkable forms of this phylum are recorded from these waters.

Of the lower aquatic invertebrates, such as the protozoans, poriferates, hydroids, rotifers, worms, bryozoans, and the smaller crustaceans, little is known as regards our Kentucky forms although an occasional remarkable find\* suggests that many species of great interest to the zoologist may be represented; here is a rich and almost untouched field for the Kentucky naturalist.

More work has probably been done on the insects of the State than on any other one class of animals and yet this field is so large that no attempt has been made to list all of the species represented. This would indeed be an enormous task for the number of species would run into the thousands. The fact that over two thousand five hundred kinds of beetles alone have been recorded for the State of Indiana\*\* would suggest that at least an equal number of species of this same single order might be found in this State which is even more favorable to insect life than is Indiana. A preliminary survey shows that the orders Hemiptera, Lepidoptera, Coleoptera, Diptera and Hymenoptera are represented in Kentucky by very great numbers of species and it will probably be many years before much progress can be made on their actual enumeration by entomologists.

Even the comparatively small class of arachnids have some very interesting members in this region† and it is not improbable that species of spiders new to science may be found in Kentucky, particularly in the more extensive caves.

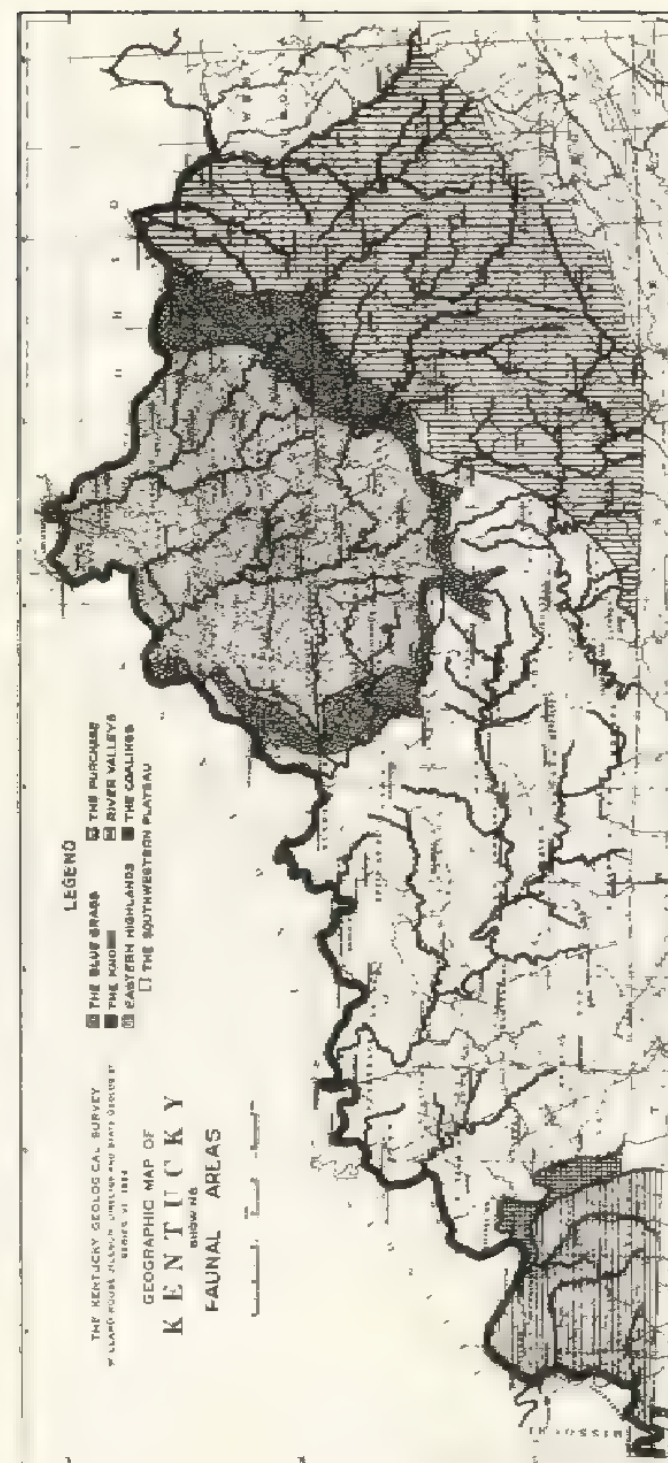
Of other important groups, of which may be mentioned the myriapods, the terrestrial gastropods, the nematodes, the various parasitic orders, and the amphibians, practically nothing has been published, either as to the species represented or as to their range.

In fact, the fauna of Kentucky as a whole, has hardly been touched by the systematic zoologist. Entire groups have been neglected; great geographical areas are yet to be explored by

\*A very interesting species of fresh water medusa has been found in the Kentucky River.

\*\*Blatchley, W. S. Coleoptera of Indiana. 1910.

†The very remarkable *Hypochthon thorelli* has been taken at Pineville



the specialist; the harvest is indeed very great and the workers pitifully few.

#### PRESERVATION OF WILD LIFE

Too much emphasis cannot be placed on the necessity for the preservation of the most desirable of our wild animals, if Kentucky expects to keep pace with other states in the general conservation program.

Our commissioners and game wardens should have the hearty and enthusiastic support of the citizens of the State and every effort should be made to secure legislation which will tend to save our present fauna.

#### FAUNAL AREAS

The natural faunal areas of the State follow very closely, as would be expected, the physiographical and soil zones which



Photo by A. M. Miller

Fig. 26  
THE EASTERN HIGHLANDS  
A view in Magoffin County

have been previously discussed. The boundaries of these areas are of course not sharply defined but the areas themselves are rather distinct. Named in order, beginning with the most abundant in animal life, they may be designated as follows:

*The Eastern Highlands.* This area includes the mountains

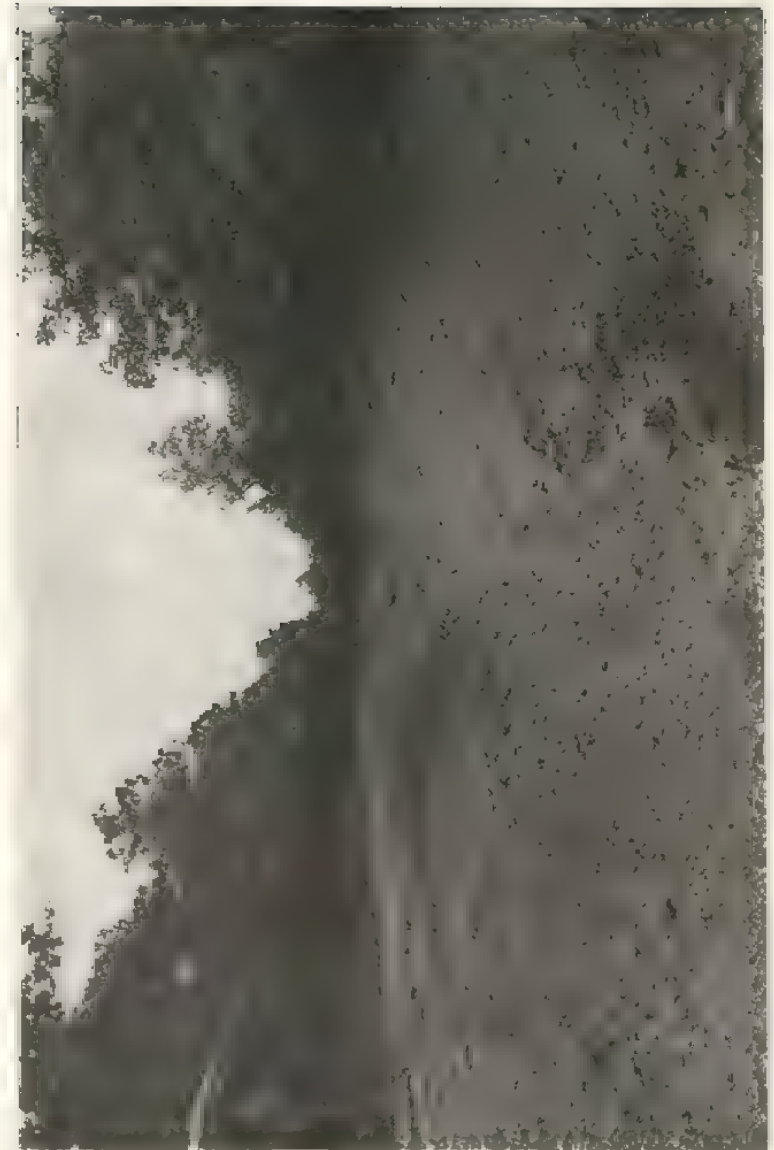


Fig. 27  
THE COALINGS



and the conglomerate out-crops at their borders. In this zone is the roughest and most inaccessible country in the State and it is the habitat of the largest of the wild animals. Much of the region is quite primeval in character and it contains by far the largest number of the forest-inhabiting species.

*The Coalings.* The name "Coalings" or "Coalins" is locally applied to that very interesting strip of country between the Cumberland and Tennessee Rivers, on account of the fact that at one time large amounts of timber were cut from this tract to supply wood for charecoal. This region is one of the wildest in the State and must be ranked next to the eastern highlands



Fig. 28 Photo by W. R. Jilison  
A BEAUTIFUL RIVER VALLEY  
Scene on the Kentucky River near Frankfort

in the variety of its fauna. Because of the sparse population and the natural river barriers on both sides, it contains a large amount of game. It will be noted that from this region are recorded deer, wild turkey and otter, and it was here that the beaver was last seen. In addition to the wild game, part of this district, was stocked in 1919 with deer brought from Michigan in an attempt to establish a game preserve.

*The River Valleys.* The aquatic life of the rivers and the rich zones at the water edge make the river regions important as faunal areas. In many places the river banks are too high and

precipitous to admit of cultivation and as a result are thickly covered with wild vegetation. This results in a varied and rather crowded population of insects, amphibians, reptiles and birds. It will be noted later, in the discussion of the birds, that the river valleys offer the best collecting grounds for the ornithologist.

*The Purchase.* This is the most distinct geological, physiological and zoological area in the State. Geologically it represents Cenezoic elevation; physiographically it is comparable



Fig. 29 Photo by W. R. Jilison  
THE PURCHASE  
A panorama in Hickman County

to the more southern marsh lands; zoologically it is part of the Lower Austral Zone. Its animal life is abundant and in many instances unique for the State.

*The Southwestern Plateau.* This region includes all of that part of the State west of the Knobs and the Mountains to the Cumberland River. It includes those physiographical and geological areas which have been described in Chapter I as the Western Coal Field, the Chester Outcrop, the Cavernous Limestone Area and the Waverly Outcrop. The topography is varied, the soil conditions are diversified and the flora shows much variation, but there are no natural barriers for animals, the physical boundaries of the subdivisions are not sharply defined, and the

records from the various counties included show that the geographical distribution of the animals makes it necessary to consider it as a continuous faunal region. Even as a whole, the Southwestern Plateau is not clearly set off from other parts of the State zoologically, but merges its fauna with that of surrounding regions. The animals of the district included in the Waverly Outcrop are practically the same as those of the Knobs to the north and the foothills of the mountains to the east; the river life is about the same as that in other parts of the State; the faunal conditions in the Western Coal Field are very suggestive



Fig. 30 Photo by W. R. Johnson  
RIVER SCENE IN THE SOUTHWESTERN PLATEAU  
At the mouth of Glover's Creek on the Barren River

of those in the eastern mountains and perhaps the fauna was much the same originally although it is now much more limited; the plains and forests of the limestone area show only slightly different species from those of similar habitats of other regions.

One part of the Southwestern Plateau, however, must be noticed particularly, not because of its present significance but because of its most interesting history. This is the area formerly known as the "Barrens," a region often mentioned in early writings. "The Barrens" is the old term given by the pioneers

to that area surrounding the Western Coal Field and extending eastward to the Knobs and southward to the Tennessee border. In the early days of Kentucky history this region was destitute of trees, due, according to some authorities, to the burning off of the timber by the Indians and the trampling down of the



Fig. 31 Photo by W. R. Johnson  
THE "BARRENS"  
Soil and surface conditions in Barren County

vegetation by buffaloes, but it has since become well wooded and entirely different in aspect. Professor Miller has suggested that this area is subject to droughts and that perhaps in early times great forest fires burned off much of the timber leaving a barren area which suggested the name. This region, no longer treeless as the name once implied, still remains a rather definite zoological area on account of soil conditions and on account of its caves and underground streams. It was in this region that the buffalo made its last stand; it was here that the wolf was last seen; and it is in this area that foxes, skunks, rabbits, the constrictor snakes and quail are now more abundant than anywhere else in the State. The western part of this territory, also furnishes examples of Trans-Mississippian fauna.

*The Knobs* This zone is coextensive with the physiographical area of the same name. The fauna would be more char-



acteristic if the region were more extensive and more compact. As it is, the scattered and discontinuous character of the typical soil and outcrops make it a rather indefinite faunal district. If there is any one characteristic animal for the zone, it is probably the copperhead snake.



FIG. 32 Photo by A. M. Miller  
THE KNOES

Typical landscape on White Oak Creek, Estill County

*The Blue Grass.* The well cultivated and thickly populated district known by this name in the broadest sense is the least interesting of the faunal areas of the State. Practically all of the native animals have disappeared, and except for the smaller rodents and the birds, little wild life is found.

#### ANIMAL GROUPS

The animals of the world may be grouped in the following twelve great phyla:

- I. *Protozoa* One celled animals; mostly microscopic  
Amoeba, paramoecia, etc.



FIG. 33  
THE BLUE GRASS  
Looking out over a typical Blue Grass field. A view on the J. E. Madden Estate, near Lexington

- II. *Porifera*—Sponges.
- III. *Coelenterata*—Jellyfishes, corals, anemones, hydroids, etc.
- IV. *Ctenophora*—Sea walnuts, comb jellies, etc.
- V. *Platyhelminthes*—Tapeworms, flukes, etc.
- VI. *Nemathelminthes*—Roundworms, trichinae, hookworms, etc.
- VII. *Echinodermata*—Starfishes, sea-urchins, sea-cucumbers, etc.
- VIII. *Annelida*—Earthworms, sandworms, etc.
- IX. *Molluscoidea*—Brachiopods, bryozoans, etc.
- X. *Mollusca*—Clams, oysters, snails, ortopi, etc.
- XI. *Arthropoda*—Crustaceans, insects, spiders, centipedes, scorpions, ticks, mites, etc.
- XII. *Chordata*—Tunicates, lancelets and all vertebrates.

Of these phyla, the eleventh, the *Arthropoda* is by far the largest, containing more species than all of the others put together. Certain other of these phyla, notably the protozoans, coelenterates and molluscs, contain enormous numbers of individuals and make up a much larger portion of the animals of the earth than do the larger forms with which we are more familiar and which are often incorrectly supposed to represent our commonest animals.

Each of these phyla is subdivided into classes, the classes into orders, the orders into families, etc., according to the following scheme which it is necessary to understand in order to interpret the divisions as used in this report:

- Phylum—e.g. Chordata
  - Subphylum—e.g. Vertebrata
    - Class—e.g. Aves
      - Order—e.g. Passeres
        - Family—e.g. Turdidae
          - Genus—e.g. *Hylocichla*
            - Species—e.g. *guttata*
              - Variety—e.g. *pallasi*

The above classification represents the technical nomenclature of the Hermit Thrush. All other animals are classified according to the same scheme and the scientific name is written as a binomial, the genus and species name, i.e. *Felis domestica*

(cat), *Canis familiaris* (dog), *Bufo americanus* (toad), etc., with the variety or subspecies following if the species is subdivided i.e. *Hylocichla guttata pallasi* (hermit thrush). It is customary, also, to add the name, or an abbreviation of the name, of the author of the species to the scientific name, thus, *Procyon lotor* Linn. (raccoon), indicating that Linnaeus described the species.

#### THE CHORDATA

In this report we are concerned only with a few animals of the highest phylum, the *Chordata*. This phylum is characterized by the fact that the animals belonging to it all have at some time in their lives a skeletal axis known as a notochord (which gives the name to the phylum), paired gill slits opening from the pharynx, and a central dorsal nerve cord. The phylum is subdivided into the following subphyla:

##### Phylum *Chordata*

- Subphylum 1. *Enteropneusta*—Wormlike forms such as *Glossobalanus*.
- 2. *Tunicata*—Ascidians, thaliaceans, etc.
- 3. *Cephalochorda*—Lancelets.
- 4. *Vertebrata*—Mammals, Birds, Reptiles, Amphibians, Fish, etc.

Of these subphyla, the last is by far the most important, since it contains practically all of our highest forms of animal life and it is in this subphylum that we find the animals discussed in the following pages.

#### THE VERTEBRATA

As the name would indicate, the animals in this group all possess a modification of the notochord in the form of a vertebral column which in the higher forms is made up of a series of bones called *vertebrae*. The vertebrates are therefore commonly spoken of as those animals which have a "back-bone." Seven classes of vertebrates are recognized, which are, beginning with the lowest:

Subphylum *Vertebrata*

- Class 1. *Cyclostomata*—Lampreys and hags.
- 2. *Elasmobranchii*—Sharks, skates, rays, etc.
- 3. *Pisces*—Fish.
- 4. *Amphibia*—Frogs, toads, salamanders, etc.
- 5. *Reptilia*—Crocodiles, turtles, lizards, snakes, etc.
- 6. *Aves*—Birds.
- 7. *Mammalia*—Hairy quadrupeds, bats, whales, monkeys, etc.

This report deals with the last three of these classes as they are represented in Kentucky and is an attempt to catalogue the animals belonging to these groups which are found in the State with such locality and migration records as it has been possible to secure.

It will be seen from the foregoing outline of the animal kingdom that these classes represent, after all, a very small part of our animal life, but they include those forms which attract most attention, in which most persons are interested, and of which reports can be most satisfactorily secured.

## SOURCES OF INFORMATION

The records and notes included in the following pages have been drawn from a wide variety of sources. The writer has of course collected considerably in the different faunal areas of the State, but his observations make up only a small part of the data. Much of the information has been furnished by the farmers, county agents, teachers, students, hunters, trappers, and naturalists of many localities as will be noted in the authorities as credited. Many of these records are taken from specimens in the University collection. In many cases newspaper items from all sections of Kentucky have been followed up by personal correspondence, and in some instances the press clippings have been accepted as published where there seemed to be no reason to doubt the accuracy of the account. Unfortunately, it is seldom possible to be sure from the press accounts, especially regarding reptiles and birds, the exact species referred to. For example, the account of the killing of a rattlesnake might be accepted without question, since it is hardly likely that anyone would mistake this reptile, and we have only one

species common to the State; on the other hand, the account of the killing of a copperhead would be considered with much suspicion, since our experience has been that nine out of every ten "copperheads" brought to the laboratory, prove not to be copperheads at all. Another difficulty in verifying reports from distant localities is that it is seldom possible to secure the specimen for examination. This is due principally to three causes: either the animal was destroyed, or the time required for correspondence has been so long that the specimen can not be shipped, or there is no convenient way of sending the specimen on account of distance from post or express office or lack of materials for preservation or of containers. It is believed, however, that all of the records here included are authentic and may be used as a basis for locality and seasonal check-lists.



## CHAPTER IV. THE REPTILES OF KENTUCKY

### THE CLASS REPTILIA

The reptiles are usually grouped into four orders: the Testudinata, containing the turtles and tortoises; the Rhynchocephala, represented by a single New Zealand species; the Crocodilini, including the crocodiles, gavials and alligators; and the Squamata, containing the lizards, chameleons and snakes. Of these, only the first and last are represented in Kentucky, but the number of species and individuals of these groups common in the State constitutes a considerable and interesting part of our fauna.

Reptiles are all cold-blooded, usually possessing scales or bony plates or shells, and breathe by means of lungs. To many persons the word "reptile" suggests only a snake, but scientifically the snakes are the least typical of all the reptiles since they are extremely specialized and do not well represent the class as a whole. To many, also, the term reptile suggests a repulsive, venomous animal, to be feared and avoided, while in fact the group contains some of the most harmless and interesting creatures in the animal kingdom. In fact, only three reptiles found in this State are in the least dangerous to man and most of them are not only harmless but are actually beneficial. Reptiles are not "slimy"; they do not "sting"; they are not prone to "chase" the traveler; they will not "charm" the unwary individual; they are not "cold and clammy." On the contrary, most reptiles are extremely shy; are often really beautiful in shape and coloration; are in many cases most graceful and athletic; and in all cases are well worth careful, unprejudiced study.

#### ORDER TESTUDINATA (*Turtles and Tortoises*)

Characters: Reptiles with stout short body enclosed in a shell; no teeth; quadrate bone immovable; generally with five toes; neck very flexible.

The terms "turtle," "tortoise" and "terrapin" are often

used more or less interchangeably in popular discussions and in fact do not have a very strict scientific distinction. Originally the name "turtle" was applied only to the marine, paddle-limbed forms, all others being called land or water "tortoises." In this country, however, many of the inland and terrestrial forms are called turtles and the term "terrapin," usually applied to the hard-shelled freshwater species which were edible, is now used for many forms which do not belong in that category.

There is no need for a definition of a turtle, since the characteristic "shell" distinguishes them at once from all other animals as surely as the feathers distinguish a bird. The shells may be hard or soft, may be adapted for land or water, may be of various colors and with various mechanical structures, but the general shape and appearance is unmistakable.

#### CHARACTERISTIC STRUCTURES

The most characteristic structure of a turtle is of course its shell which consists of two distinct portions—an upper convex



FIG 34. *Diagram of a turtle*  
A TURTLE  
Showing parts of shell and body

carapace and a ventral flattened plastron. In some turtles these two portions are not joined at the sides of the body while in others they grow together; in some the plastron is a solid flat plate while in one group this plate has movable pieces on the ends so that the shell can be tightly closed. Both the carapace and the plastron are made up of a series of plates the number

and arrangement of which are used in distinguishing the genera and species.

The head is always strong, with powerful jaws which have sharp, horny cutting edges instead of teeth. The neck is long and flexible and the skin of both head and neck is very loose, enabling the animal to stretch this part of its body far out of the shell or to pull it back under the carapace. The color and markings of the head and neck are important characters to be noted in identifying species.

The feet may be paddle-like without distinct toes and used in a very "club-footed" fashion, or the toes may be well separated. This character, and the type of claws, must also be used in making determinations.

#### DESCRIPTIVE TERMS

In the following descriptions, the measurements and weights given are always for adult specimens; young individuals will of course vary. The measurements for length and width of shell always refer to a straight line between the two points as measured by calipers, not to measurements around the curve of the shell. The term "keel" refers to elevated ridges either on the entire carapace or on individual plates. All lengths and widths given for shell or head refer to the maximum. Distribution refers to distribution within the State.

#### LIST OF SPECIES

##### 1. *Chelydra serpentina* Linn.—Snapping Turtle.

*Description:* Length 12—14 in.; shell high in front, low behind; carapace rough, without markings, the three ridges becoming obsolete with age; plastron small, cross-shaped; color of body dark brown; head large, with loose soft skin and dark spots; eyes small and close together; jaws hooked and powerful; tail long with compressed tubercles above and two rows of scales on under surface; claws 5-4; web between toes small.

*Distribution:* Abundant in all parts of State.

*Records* (By counties): Ballard (E. A. Whalin); Bath "by the hundreds" (C. F. Martin); Boone (T. Hensley); Bracken (P. J. Arnold); Breathitt (G. W. Thompson); Calloway (J. B. Gardner); Campbell (A. B. Regenstein, H. F.

Link); Carlisle (B. A. Hensley); Casey (C. Lucas); Clay (L. A. Clark); Crittenden (J. R. Spencer); Daviess (J. E. Russell); Edmonson (W. G. Bullinger); Elliott (H. H. Mayse); Fayette (W. D. Funkhouser); Fleming (H. F. McKenney); Gallatin (F. Irwin); Graves (B. H. Mitchell); Grayson (J. S. Hughes); Green (J. A. Howard); Hart "plenty" (J. S. Pullen); Henderson (D. W. Martin); Henry (L. S. Rhodes); Hickman (L. Jackson); Hopkins (M. M. Gordon); Jackson (W. R. Reynolds); Kenton (C. A. Wickland); Knott (A. Campbell); Knox (E. Mayhew); LaRue "plenty" (J. N. Jones); Laurel (F. B. Wilson); Leslie (M. O. Fairchild); Lewis (R. O. Bate); Lincoln (C. B. Elston); Livingston (T. Corral); Logan (W. R. Whitlow); Marion (H. J. Childress); McCracken (J. R. Bird); McLean (R. H. Ford); Nelson (C. L. Hill); Oldham (G. B. Nance); Owen (D. P. Morris); Pike (W. M. Wesley); Pulaski (W. C. Wilson); Taylor (J. L. Miller); Union (A. M. Allen); Washington "plenty" (R. M. Heath); Webster (L. E. Cutler); Wolfe (W. R. Sebastian).

#### Remarks:

This is the most vicious and savage turtle in Kentucky and well deserves the name "snapper" since it has the peculiar habit of *striking* at its enemy like a snake. It is also our largest turtle, reaching in extreme cases a length of two feet and weighing as much as thirty pounds. It is not able to entirely withdraw its body into its shell but makes up for this handicap by its fighting ability. Its bite is to be feared as an average sized individual would have no difficulty in severing a finger with its razor edged jaws backed by powerful muscles.

It lives in the mud and feeds on fish and young water-birds. It apparently can not swallow unless its head is under water and although it may catch its prey out of water it always drags it beneath the surface to eat.

The eggs which are smooth, round and white, with a thin hard shell are laid in moist earth near the water in the early summer. There are about two dozen eggs in a clutch.

Snapping turtles live well in captivity but are dangerous to handle since they can reach their head far back over the shell and can strike some distance sideways. They should always be held by the tail and held well away from one's body.

When old and fat, they are said to be good to eat. They do considerable damage to fish, water-birds and frogs.

## 2. *Kinosternum odoratum* Latr.—Musk Turtle.

*Description:* Length 4—5 in.; shell higher behind middle than in front; carapace long, narrow, dusky, not keeled except in young specimens, sometimes faintly spotted; plastron very narrow, not protecting fleshy parts, with seven, nine or eleven plates, the posterior lobe longer than anterior; head large, with two yellow stripes running from snout to neck, one over the eye and one beneath the eye; feet with large webs.

*Distribution:* Found in Kentucky and Dix Rivers; apparently not common.

*Records:* Woodford Co.; Anderson Co.; Jessamine Co.; Dix River (W. D. F.).

#### Remarks:

This little turtle much resembles the snapping turtle in its habits as well as in its looks. Like a snapper, its body is not entirely protected by its shell, but like the snapper also, it is a vicious little fighter. It gets its popular name of "musk turtle" and its specific name of *odoratus* from the fact that it has a strong and peculiar odor.

It lives almost entirely under water, feeding on the muddy bottoms of sluggish streams and ponds, but often comes to the surface, especially in the spring, to bask in the sunshine. Its eggs, like those of the preceding species are laid near the water and covered with soft loose earth.

It is not a good aquarium pet for it is very timid, seldom coming to the surface of the water, is given to hiding in dark corners, and is not pleasant to handle on account of its odor.

It is believed to feed chiefly on small fish, worms, insect larvae and crustaceans, but its habits are not well known.

## 3. *Chrysemys marginata* Agas.—Painted Turtle.

*Description:* Length 5—7 in.; shell depressed and flattened; carapace perfectly smooth, rounded, never keeled, olive green in color, each plate having a narrow yellow border, marginal plates generally brightly marked with red



(which gives the popular name), lateral plates out of line with the middle ones; plastron with twelve plates, yellow with a black patch in center; head black, striped with yellow; reddish markings on neck and legs

*Distribution:* Western and southern parts of State. Not common.

*Records:* Daviess Co.; Henderson Co. (W. D. F.).

*Remarks:*

This interesting little turtle may often be seen basking on logs and stumps in the water or on the top of masses of grass or weeds, but plunges quickly into the water if frightened. It is a typical pond turtle, preferring quiet, shallow water and particularly localities where there is plenty of vegetation and a muddy bottom. These turtles are omnivorous, living on insects, small fish, tadpoles and aquatic vegetation. They are very timid and seldom bite. They are able to live for a long time out of water and may be kept as pets but apparently always retain their retiring disposition.

The eggs are small, elliptical, pinkish white in color and have soft shells. Fifteen or twenty eggs are laid in sand, often a considerable distance from the water.

**4. *Pseudemys troostii* Holb.—Mud Turtle.**

*Description:* Length 8—10 in.; shell rounded in front and sharper behind; carapace smooth above and notched along the edge, olive green with irregular black markings; plastron yellow blotched with black; head, neck and legs greenish-brown without markings; claws very long.

*Distribution:* Only one record; is apparently rare.

*Record:* Graves Co. (W. D. F.).

*Remarks:*

It is surprising that this turtle should not be found more commonly in Kentucky but we have seen it only once and it has never been reported. In regions where it is abundant, it is considered excellent for food and is often found on the markets.

Its habits are about the same as those of the preceding species.

**5. *Pseudemys elegans* Wied.—Cumberland Terrapin.**

*Description:* Length 9—11 in.; carapace arched, heavy, rough, brown with irregular yellow markings; plastron yellow, strongly marked with dark brown, top of head with many fine green lines; behind the eye a large bright red band; neck striped with green; feet marked with yellow.

*Distribution:* Southern and western parts of State.

*Records:* Bell Co.; Harlan Co. (W. D. F.).

*Remarks:*

This brilliantly marked turtle is easily recognized by the broad crimson band extending from behind the eye to the base of the head. It is excellent as food, very hardy and long-lived, eats almost anything and lives well in captivity. It is not at all timid but is of a rather gentle disposition. We have never known of one attempting to bite when handled but they will sometimes fight when caught on a hook.

The eggs are large, white, oval, soft-shelled and are laid in well-hidden places near the water in very shallow scooped out nests in sand or mud.

**6. *Malacoclemmys geographicus* Lesueur.—Map Turtle.**

*Description:* Length 10—12 in.; shell broad and flat; carapace smooth with a faint central keel, dull yellow-brown with a fine network of yellow lines which are sometimes wanting; underside of marginal plates of carapace yellow with peculiar round greenish markings; plastron entirely yellow; head and neck greenish-brown with many narrow pale green lines; behind the eye a small triangular pale green spot; tail long with yellow stripes.

*Distribution:* Common along the Ohio River.

*Records:* Jefferson Co.; Daviess Co.; Campbell Co. (W. D. F.).

*Remarks:*

Little is known of the life history or habits of this rather common turtle. It is prized as an article of food and is rather easily captured but apparently will not live in captivity as shown by experiments of Ditmars.\* It is omnivorous and is

\*Ditmars, R. L. Reptile Book, p. 44.

often caught by the fishermen on cat-fish lines. It is very retiring in habits and timid in disposition.

7. *Terrapene carolina* Linn.—Box-turtle, box-terrapin, terrapin, "pocket-book," "lock-up," etc.

*Description:* Length 5—6 in.; height 2½ in.; width 4—5 in.; carapace keeled in young specimens but smooth in old; plastron transversely hinged so that the shell can be completely closed; carapace arched, front and hind edges flaring outward and somewhat curled upward; colors variable, chiefly black and yellow; eyes red in male, yellow in female; hind feet with four toes.

*Distribution:* Extremely abundant in all parts of the State.

*Records (By counties):* Ballard (E. A. Whalin); Bath (C. F. Martin); Boone (W. D. Sutton); Bracken (P. J. Arnold); Breathitt (G. W. Thompson); Campbell (A. B. Regenstein); Carlisle (B. A. Hensley); Casey (W. B. Moser); Clay (L. A. Clark); Clinton (W. M. Watkins); Crittenden (J. R. Spencer); Daviess (H. S. Berry); Edmonson (W. G. Bullinger); Elliott (H. H. Mayser); Fayette (W. D. F.); Fleming (H. F. McKenney); Gallatin (L. D. Richards); Graves (B. H. Mitchell); Grayson (J. S. Hughes); Green (J. A. Howard); Hart (J. S. Pullen); Henderson (D. W. Martin); Henry (L. S. Rhodes); Hickman (L. Jackson); Hopkins (M. M. Gordon); Jackson (W. R. Reynolds); Kenton (C. A. Wicklund); Knott (A. Campbell); Knox (E. Mayhew); Laurel (F. B. Wilson); Lawrence (G. C. Baker); Lewis (R. O. Bate); Lincoln (C. B. Elston); Livingston (G. Ferren); Logan (W. R. Whitlow); Marion (H. J. Childress); McCracken (J. R. Bird); McLean (R. H. Ford); Martin (E. Cassidy); Morgan (R. B. Rankin); Muhlenberg (F. D. Townes); Nelson (C. L. Hill); Ohio (T. Hughes); Oldham (G. B. Nance); Owen (D. P. Morris); Owsley (P. M. Frye); Pike (W. M. Wesley); Pulaski (W. C. Wilson); Taylor (J. L. Miller); Union (A. M. Allen); Washington "plenty" (R. M. Heath); Webster (L. E. Cutler); Wolfe (W. R. Sebastian).

*Remarks:*

This interesting little tortoise shows so much variation in color-pattern that it is almost safe to say that no two specimens are exactly alike. The general scheme of decoration of the cara-

pace is a number of yellowish spots on a dark brown or black background. Sometimes these spots are found only on the top of the carapace, sometimes all over it; sometimes they are separate, sometimes united to form bands. Ditmars has well described their appearance by stating that the blotch often "resembles the outline of a large drop of fluid falling upon a flat surface and splashing in every direction. Occasional specimens look as if they had been spotted with a brush, with no regard for regularity in placing the blotches." The plastron is as variable as the carapace, sometimes being curiously marked and sometimes uniform in color.

This is one of the best protected of all the tortoises for when it closes its shell by powerful muscles, it is extremely difficult for an enemy to gain entrance and the shell can be kept closed for several hours.



FIG. 15

"LOCKED UP"

View of undersurface of box turtle with shell closed

It is strictly terrestrial and will drown if kept in water for any considerable time. However, an interesting record has been obtained from Troup 1 of the Boy Scouts of Lexington who while camping on the Dix River saw a box-tortoise in the water attacked by a water snake. The tortoise quickly closed its shell, catching the head of the snake between the valves and both

animals sank to the bottom. In a few minutes the body of the snake came to the surface with the head completely crushed.

Box tortoises are both herbivorous and carnivorous, feeding on vegetable matter as well as on insects, caterpillars, worms and slugs. They are said to be very fond of berries, and a specimen kept by Prof. W. S. Webb of Lexington, showed a fondness for tomatoes.

They are usually quiet during the day and prefer sunny spots. About dusk they begin to feed and continue to hunt until it is quite dark. At night they return to their holes. In the winter they hibernate deeply in the earth.

The eggs are small, oval in shape, and thin shelled. Little is known of their incubation or development in fact, "baby" box tortoises are very seldom seen.



FIG. 26  
A SOFT BODY BUT WICKED JAWS  
A young soft-shelled turtle showing leathery carapace

Box tortoises make excellent pets as they are very easily tamed and not at all vicious or pugnacious. They have been known to live in captivity for over fifty years.

### 8. *Amyda spinifera* LeSueur.—Soft-shell Turtle.

*Description:* Length 12-14 in.; shell soft, flat and nearly round; carapace not hardened, simply a tough, leathery skin, dull olive in color with a narrow yellow and black border, the front margin provided with small, sharp spines; plastron soft, entirely white; neck very long; snout long and slender; feet very broad with large webs; on each side of the head is a yellow black-bordered band extending through the eye to the snout.

*Distribution:* Common in Ohio and Mississippi Rivers.

*Records:* Ohio River (H. Garman); Pond River (N. Sullivan); Jefferson Co.

#### *Remarks:*

A mean, vicious, dangerous reptile, whose soft pan-cake-like body is no indication of its disposition. The soft skin of the head covers a pair of keen-edged jaws which have the power of inflicting almost as severe a bite as a snapping turtle. Ditmars says "the soft-shelled turtle at bay is one of the most vicious of cold-blooded creatures; moreover, the knife-like edges of the jaws of large individuals are formidable weapons." They are the bane of the fisherman and the writer would advise from sad experience that if these turtles be caught on the hook they had best be cut loose without regard to loss of "hook, line or sinker." When undisturbed, they swim with slow graceful movements, feeding on fish, frogs and young water fowl among which they do great damage.

The eggs are large, spherical, and white, with thin, hard, brittle shells, resembling those of the snapping turtle.

The writer has never tried, and has no desire, to keep them as pets in captivity.

### 9. *Amyda mutica* LeSueur.—Leather Turtle.

*Description:* Length 6-7 in.; shell almost circular, flat and soft; carapace without spines, light brown with faint dark brown blotches; plastron white; head small and narrow, brown with faint greenish band which is sometimes lacking; snout very long and "pig-like;" feet large; webs broad.

*Distribution:* Ohio and Mississippi Rivers.



*Records:* Ohio River (H. Garman).

*Remarks:*

Very much like the preceding except in size and in the absence of the little spines on the anterior margin of the carapace. It is the smallest of our soft-shelled turtles and is apparently not nearly so common as *T. spinifer*. It is often mistaken by fisherman for young specimens of the more common form.

Its habits are probably much like those of its larger relatives, but are not well known.

10. *Amyda nuchalis* Agassiz.

I do not know this turtle and am including it on the authority of Professor Garman who states\* that it occurs in the headwaters of the Cumberland and Tennessee Rivers.

It is a soft-shelled turtle and probably a close relative of *T. muticus*.

ORDER SQAMATA (*Chameleons, Lizards and Snakes*)

*Characters:* Reptiles with horny scales; vertebrae procoelous; quadrate bones movable; transverse anal opening; two copulatory organs in male; outer layer of skin shed periodically; limbs, when present, adapted for walking on land.

This order is represented in Kentucky by two suborders, the *Lacertilia*, containing the lizards, and the *Ophidia*, the snakes. Neither suborder boasts of many species in this State, but the number of individuals is large and they are widely distributed so that they are the best known of our reptiles.

Few persons pay much attention to turtles or know one kind from another, but all persons notice lizards and snakes—especially snakes—and are often much concerned regarding the species which they have seen.

SUBORDER LACERTILIA (*Lizards*)

*Characters:* Reptiles with horny epidermal scales, usually smaller below than above; vertebrae usually procoelous; quadrate bones movable; transverse anal opening; paired

copulatory organs; pectoral arch present, at least vestigial; rami of lower jaw solidly united; usually but not always well developed legs.

LIZARDS

The lizards are very closely related to the snakes, belonging to the same order, the Squamata, and while at first thought it would seem easy to distinguish between the two kinds of reptiles, since most lizards have legs and most snakes have no legs, it is in truth not so simple a matter for some lizards are limbless and some snakes have at least rudimentary legs. The scientific distinction is based largely on the fact that in the lizards the two halves of the lower jaw do not have the elastic cartilage found in the snakes and in the lizards the ventral plates are usually smaller than the dorsal. However, there is little difficulty in separating the Kentucky forms of these two groups of reptiles, since in this State we have only one legless lizard and all of the snakes are entirely without visible limbs.

The lizards represent an extremely old race of animals, having existed from the Carboniferous, and still retain a very primitive and very generalized structure. They show excellent bilateral symmetry, the legs are all about equal in length, they have specialized very little in any respect, have developed no clumsy armour as have the turtles, are active and alert, almost omnivorous feeders, and have held their own during the centuries while other reptiles have come and gone.

None of our local lizards are poisonous, in spite of many superstitions to the contrary, but large specimens can bite severely if handled. Most are valuable destroyers of insect pests.

LIST OF SPECIES

1. *Sceloporus undulatus* Latr.—Brown Swift. Fence Lizard.

*Description:* Length 6 in.; femoral pores present; fourth toe longer than third; scales rough and rather sharply spined; body brown or gray with wavy cross-bands; throat of male blue; tail slender.

*Distribution:* Very abundant in all parts of the State.

\*Apparently equally at home in the mountains of Eastern

\*Garman, H. Vertebrate animals of Kentucky. 1894. p. 34.

Kentucky and in the forests of the extreme western end of the State."—Garman.

*Records:* Eastern Kentucky, Western Kentucky (H. Garman); Woodford Co.; Bell Co.; Hart Co.; Owensboro; Dix



FIG. 37  
A TYPICAL LIZARD.  
The Brown Swift with characteristic scaly body, short legs and long tail.

River (W. D. F.); Russellville (G. R. Bibb); Harlan Co. (W. D. F.).

*Remarks:*

This well known and entertaining little lizard is usually found in forests and seems to prefer dead timber—old stumps, rotten logs and the like—where they scamper about or bask in

the sun, swift as lightning if disturbed and not easily seen on account of their protective coloration when at rest.

They are very timid and perfectly harmless and their speed and elusiveness has well earned for them the common name of "swifts." It is a severe test of the ability of the amateur collector to attempt to capture a brown swift. It seems so easy a matter—the little animal is at rest on a log, the stealthy approach is made, the hand is quickly brought down on—the place where the lizard *was*. Or the swift sees you approach and quickly glides around to the other side of the log you follow him and he has disappeared. He is the master of the game of hide and seek. If by good fortune you do get your hands on him, the result of your efforts will probably be a wriggling tail left in your hand grasp, while the owner of this appendage scampers up a tree.

Swifts love sunlight and dry places. They feed on worms, caterpillars, slugs, grubs and insects and do no harm.

The eggs are soft, white and thin-shelled and about half an inch in length and oval in shape. They are laid in moss and rotted grass and leaves.

Swifts live well in captivity but are very timid and do not make friendly pets.

2. *Ophisaurus ventralis* Linn.—"Glass snake," "Joint snake," "Slowworm," "Blindworm," Anguid, etc.

*Description:* Length 20—30 in.; body slender, elongate and very snakelike, with no indications of legs; tongue in two parts, the anterior part thin and scaly; the posterior thick and fleshy; a deep fold in the skin on each side of the body; upper surface of body smooth, glassy, brown or black with small greenish dots; undersurface uniform greenish-white.

*Distribution:* Fairly common throughout the State.

*Records:* Western Kentucky (H. Garman); Munfordville; Owensboro; Pineville (W. D. F.).

*Remarks:*

This peculiar legless lizard looks so much like a snake that the uninitiated may be forgiven for so mistaking it at first glance. It can be immediately distinguished as a lizard, however, by the small scales on its belly which are so different from the broad

transverse scutes of the snake and by the fact that it has eyelids and ear-openings, characters which snakes do not possess.

It is simply a degenerate lizard which has lost its legs and is having a hard time holding its own in the struggle for existence with its more fortunate relatives. Its life and habits are about the same as those of other lizards except that it is not so active,

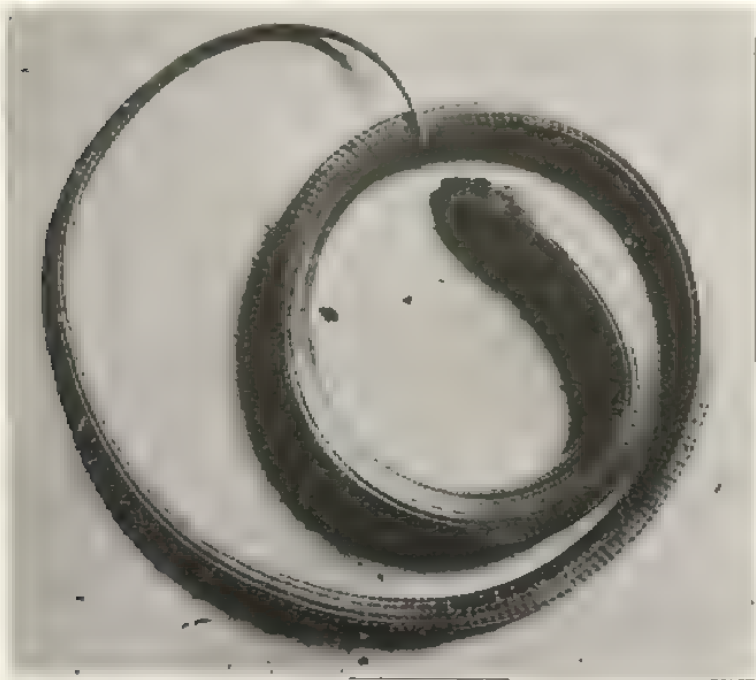


FIG. 10.  
THE "GLASS SNAKE."

A legless lizard, about which there are many superstitions.

its senses are not so acute and it is lower in the scale of development than our other forms.

There is an old and very foolish notion about this animal which has given to it the common names of "glass snake" and "joint snake." This is the ridiculous superstition that it is a snake which is very brittle and which if struck with a stick will shatter into many fragments and that these pieces will afterwards collect and grow together again.

The truth is that this lizard, like most other lizards, will sacrifice its tail in order to escape from its enemy. In fact it seems to be able to part with its long tail (which is longer than its body) even more easily than most of the higher forms of the group, probably being able to voluntarily shake off this appendage by autotomy when greatly frightened. If this happens, it can in time grow a new tail, but the severed tail can not grow a new body, nor do mutilated pieces of the body ever unite.

This method of escape from an enemy has been well described by Ditmars as follows:

"Let us suppose the creature to be pursued by a very common enemy—the king snake. As the pursuer overtakes his prey, he grasps it at once. There is a sudden, twisting movement on the part of the Glass "Snake", and the victor finds that the smooth, scaly length he holds in his jaws is so vigorous that it requires much attention, for it twists and wriggles with great energy. Swallowing all his prey head first, the cannibal works his jaws along the victim to engulf it from such a position, when, after much manoeuvring with the writhing quarry, the snake stops in some embarrassment. There is no head. The object that has engaged so much attention is simply the long tail of the lizard and the abbreviated owner has glided to safety."<sup>9</sup>

The "glass snake" is not swift and can not escape from its enemies by flight as successfully as can most other lizards. In fact it is rather easily captured but it is difficult to secure a specimen without the tail being broken. It is sluggish in habits and retiring in disposition. It spends most of its life burrowing in the earth in its search for earthworms and grubs. When above ground it eats insects, caterpillars and slugs and has been accused of destroying the eggs of birds which build their nests on the ground by breaking the egg-shells with its strong jaws and lapping up the contents with its tongue.

When disturbed it wriggles away very awkwardly with none of the graceful, sinuous movements of a snake.

### 3. *Cnemidophorus sexlineatus* Linn.—Striped lizard, Six-lined lizard, Sand lizard, "race-runner," etc.

*Description:* Length 7—10 in.; body brown with three yellow

<sup>9</sup>Ditmars, R. L. The Reptile Book. p. 137.



lines on each side and a brown band down middle; throat white; belly blue in breeding season; head pointed, with large plates on top; tongue forked and snake-like; legs long and strong; tail very long, slender and tapering.

*Distribution:* Along Mississippi River. Probably rare.

*Records:* Ballard Co.; Hickman Co.

*Remarks:*

This slender, graceful lizard, with its distinct markings, is usually found in open country, along sandy banks or in ploughed fields. It is extremely active and difficult to capture. These lizards may be distinguished at once from all other Kentucky species by the characteristic markings which persist throughout life. The stripes do not extend far down on the tail and the terminal three-fourths of this appendage is concolorous brown.

They are perfectly harmless and do considerable good by destroying insect pests.

4. *Plestiodon quinquelineatus* Linn.—Blue-tailed lizard, Five-lined lizard, Red-headed lizard, Skink, "Scorpion," etc.

*Description:* Length 6—10 in.; body dark greenish black with five yellow stripes, the middle one branching on the head; tail usually bright blue; old specimens often brick red with the stripes very faint or absent and the head copper-colored; 28—34 rows of scales.

*Distribution:* Abundant throughout the State.

*Records:* Woodford Co.; Anderson Co.; Jessamine Co. (W. D. F.); Knoxville (J. H. Mitchell); Entire State (Garman).

*Remarks:*

This common lizard has several popular names due partly to the fact that it changes its appearance with age and partly to the foolish beliefs regarding it in some localities.

The young specimens are almost black and later turn to greenish, with brilliant yellow stripes and a bright blue tail. This is the form known as the "blue-tailed" lizard; in old age the lizard loses its stripes and the general color changes to reddish with a bright reddish-yellow head, hence the name of "red-headed" lizard.

In many sections these lizards are greatly feared and are

known as "scorpions", a name most inappropriate since they in no way resemble scorpions. They are entirely harmless, although the larger specimens will often inflict a painful wound with their teeth in trying to escape from the hands of the captor. The notion that these animals can "sting" with their tails, is of course ridiculous.

This lizard is extremely active and is difficult to capture. Like many others, if caught by the tail, it instantly breaks off this portion of its body and scurries to safety, leaving the collector with only the wriggling appendage as a trophy. When this happens, a new tail may grow to take the place of the old.

It is apparently entirely diurnal, and hunts or basks in the sun during the day, retiring to its burrow shortly before dusk.

Its food consists almost entirely of insects, although it is reported to capture field mice and to eat bird's eggs. One specimen taken on the Kentucky River in Anderson County had a small toad in its stomach.

Its burrow is usually in a rotten log or stump or in thickly matted forest litter. It lays from three to five eggs and is credited with having a sort of maternal instinct, wrapping its body round the eggs and protecting them until they are hatched. The eggs are thin-shelled and the period of incubation is short. The young seem to be able to care for themselves as soon as they emerge from the egg.

5. *Plestiodon anthracinus* Baird—Black skink, smooth-scale lizard.

*Description:* Length 5—6 in. body slender, cylindrical, bronze with four yellowish stripes and jet black bands between the stripes; underside greenish; head in old specimens sometimes reddish; 24 rows of scales around the body; scales smooth, polished and shining; legs short; tail very long.

*Distribution:* Eastern mountains.

*Records:* Bell Co.; Knox Co.; Harlan Co. (W. D. F.).

*Remarks:*

A beautiful, shining little lizard whose body glistens in the sunlight, whose markings are unusually elegant and whose move-

ments are extremely graceful. It is very timid and disappears at the slightest movement or shadow.

It is usually found in the woods and seems to prefer the underbrush to the higher or more open timber. The writer has observed large numbers of these lizards on the sides of the mountains near Twila, Ky.

#### 6. *Lygosoma laterale* Say—Ground lizard.

*Description:* Length 3—4 in.; very small and slender; body chestnut with very fine dots on back and a broad black band on each side; abdomen a dirty yellowish-white; tail nearly twice as long as body and blue beneath; head short; legs very small.

*Distribution:* Western part of State.

*Records:* Western end of State (H. Garman); Henderson; Paducah (W. D. F.); Russellville (E. D. Cope).

#### *Remarks:*

These tiny, timid lizards with their ridiculously weak legs and clumsy little bodies, look more like small salamanders than true lizards. They are seldom seen, even where they are numerous, which probably explains why we do not have more Kentucky records. They spend most of their time hiding in the leaves and grass or beneath the loose bark of rotten logs, and are very secretive in their ways. It is only the naturalists with unlimited time and patience who can observe their habits as they are seldom seen in the open. Moreover, their protective coloration is excellent.

The scales are very minute and the body is more or less cylindrical. The tail is thick at the base—almost as thick as the body—and tapers gradually to a point.

They feed chiefly on ants and on the eggs of insects which they find under the bark. Like the other lizards, they shake off their tails when seized, and grow new ones, but these new appendages are always short and blunt and never so perfect as the old.

#### SUBORDER *Ophidia* (Snakes)

*Characters:* Reptiles with scales; procoelous vertebrae; quad-

rate bones not fixed; transverse anal opening; paired copulatory organs; no movable eyelids; no urinary bladder; no pectoral arch; rami of lower jaw not united; usually elongate in shape and without legs.

#### KENTUCKY AS A SNAKE REGION

We are here recognizing twenty-four species of snakes which have been actually found in Kentucky. There are doubtless other species represented in the State, but in this group of animals it is extremely difficult to secure positive records and absolute scientific determinations, partly because few persons take the trouble to examine snakes at all, partly because few persons who do examine the specimens have the ability to recognize species, and partly because in some families of snakes there is considerable dispute as to the validity of certain species. In addition to distinct species which should doubtless be included in this list, there are a number of subspecies and varieties of the garter snakes and water-snakes which are probably found in Kentucky, but of which we have no records. It is hoped that this list, with the technical descriptions, will enable those who are interested in these reptiles to note species not here included and furnish records regarding them.

There is no doubt that all of our snakes are being rapidly killed off, as they are in practically all reasonably thickly settled portions of our country. The tendency of most persons is to kill all snakes at sight and this tendency has resulted in a great decrease in numbers of all species. However, it is evident that many snakes persist in Kentucky in greater numbers than would be generally supposed. For example, the general opinion would certainly be that there are few rattlesnakes left in the State, yet we are here reporting records of this snake from forty-three counties, all of the past year, with the determinations made on the indisputable basis of the presence of rattles on the tail of the specimen. It will be noted that none of the Blue Grass counties are represented in this list, but practically all other parts of the State are included. Of the other two venomous snakes of Kentucky, the copperhead is still very abundant, especially in the Knobs and Mountains, and the moccasin is still found in the Purchase Region.

As to the non-venomous snakes, the black-snake, milk-snake, garter snakes and water-snakes are to be found commonly in practically every county, so that as a snake region, Kentucky may be considered as having a very abundant ophidian fauna in individuals and distribution if not in species.

#### POPULAR ABHORRENCE OF SNAKES

The average human being seems to have an antipathy for snakes. Whether this is due to heredity, to early teaching, to



FIG. 19. Photo by W. C. Allison  
AN IDEAL SPOT FOR SNAKES  
A rugged wilderness in Morgan County

the power of suggestion, to ignorance, or to superstition, we do not know, but the fact remains that most persons consider snakes as repulsive and disgusting. It may be that in the human race there is some sort of inherited fear of these reptiles as there apparently is in certain other animals such as horses, monkeys and birds. It is sometimes argued that this feeling of repugnance is due largely to the power of suggestion and to the fact that children are constantly admonished to avoid

these "horrible creatures," since most mothers will scream in terror if their child presumes to play with a captive garter-snake; that thus the child grows up with the idea that all snakes are to be feared and killed. This sort of teaching is supported by the role to which snakes are usually assigned in juvenile literature. Cases have been cited to show that if children are taught from the first that harmless snakes may be played with and kept as pets, they never have the so-called "innate dread" which is often considered as natural.\*

Perhaps much of the intolerance to serpents is because of lack of information and mistaken notions regarding these animals. Our experience has been that few persons have any accurate knowledge regarding snakes and many frankly admit that they have no desire for such knowledge—particularly if it involves any first hand investigation.

Unquestionably there are many ridiculous superstitions which tend to exaggerate any natural fear which might exist. Most of these are entirely erroneous and extremely childish; some are due to mistaken interpretations of the structure and habits of the reptiles. Some of the most wide-spread of these superstitions will be discussed in a later paragraph.

It is true that there are some snakes (three in this State) which are dangerous reptiles whose bite may cause serious trouble and in rare cases death. Such reptiles are of course to be avoided and these forms should be eliminated from our fauna. These snakes have given a bad name to the whole group. It is extremely foolhardy to take chances with the venomous species since some persons are very susceptible to the poison. However, the fact that a very few kinds of snakes are dangerous, does not mean that all of the harmless forms should be killed, any more than that the entire human race should be destroyed because there are a few bad men who may be admittedly a menace to the world.

Most of our snakes are our very good friends. They destroy noxious pests and do no harm. They should be judged with intelligence and considered without prejudice.

\*Cl. Hodge, C. F. Nature Study and Life, 1912, p. 412.



## STRUCTURE OF SNAKES

In order to appreciate the life history and habits of snakes it is necessary to know something of their structure and there are a few particular and characteristic features which are especially to be noted.

Snakes are very specialized animals and their structure shows interesting adaptations for their rather unique mode of life. Snakes have lost their legs (except in a few exotic forms



Fig. 40  
VERTEBRAL AND RIBS OF A SNAKE  
X ray of the common water snake (*Natrix fasciata*)

in which rudimentary legs still persist); they have no bony pectoral or shoulder girdle as most vertebrates have; their bodies are elongate and covered with scales; there are no movable eyelids and no external ear; the vertebrae are very numerous, sometimes several hundred, and there are a large number of ribs. All of these features are adaptations for the peculiar kind of life which they lead.

One of the most important structures which should be mentioned is the curious formation of the lower jaw, the bones of

which are not united, with the result that they may spread apart and allow the snake to swallow an object much larger in diameter than itself.

The special senses of a snake are poorly developed; it does not see well, its sense of hearing is not acute, and the senses of taste and smell are generally dull. Its chief sense organ is the slender, delicate, forked tongue, which is very sensitive and is used as a tactile organ, being thrust out with a flickering motion against any object which requires investigation. This tongue is soft and dainty, often beautifully colored with red and black, and of course can inflict no injury.

The teeth are sharp and point backward, so that the food will not slip out of the mouth—a very valuable provision, since many of the objects of prey such as frogs and salamanders are very slippery and slimy. In our venomous snakes there are a pair of fangs on the upper jaw in addition to the regular teeth. These fangs are long, recurved, and hollow, and serve to conduct poison into the object bitten. Snakes do not chew but always swallow their food whole.

The undersurface of the body is provided with transverse plates called *scutes* which are used in locomotion. The number, character and coloration of these scutes are valuable characters in identification of species. The anal opening which is usually located on the posterior third of the abdomen is a simple transverse slit. The sexual organs are internal.

The scales on the sides and back are arranged in rows around the body; the scutes are in a longitudinal series; the head is covered with plates which have definite names and are much used for purposes of classification.

## HABITS OF SNAKES

On account of the lowly, creeping life which a snake leads, it has developed in addition to the peculiar structures which have been mentioned, some interesting habits which are quite different from those of other animals.

The method of feeding is unusual since the snake has no appendages with which to handle its food. The food is not chewed, but swallowed whole, sometimes the prey remaining alive for some time after it is swallowed. We have found a blacksnake,

for example, with a huge lump in its throat, have picked the reptile up by the tail, given it a quick snap, and shaken out of its mouth a frog which hopped away apparently none the worse for its experience. We have seen a watersnake with a large frog in its mouth, the head of which was practically digested while the legs were still kicking. Snakes usually swallow their prey head first. A rattlesnake which was being kept in our laboratory was given a mole. The mole was bitten and died in less than two minutes—an interesting record of the time required for the poison to act on this animal. The snake then proceeded to try to swallow its victim. The front legs of the mole, however, stuck out at a stiff and awkward angle from the body and would not bend backward. The snake tried time and again to get the mole into its mouth but could never get the head and both legs in at the same time. Sometimes it would get the head and one leg in, but the other leg would get in the way; then it would try the head and the other leg with the same result. If the snake had been willing to begin swallowing at the other end of the mole there would have been no difficulty as the front legs would have easily been forced forward, but this, apparently, was not "according to Hoyle" and finally it gave up in disgust and allowed the mole to rot in the cage.

The method of swallowing is also peculiar. One side of the under jaw is thrust forward so that the teeth, which point backward, get a good grip on the food; then the other half of the jaw is thrust ahead and the teeth on this side get a fresh hold; again one half is protruded, then the other, and this process is continued until the prey is slowly forced down the gullet. Apparently when once this process is started, it becomes more or less mechanical. The mouth is so distended, and the senses of sight, taste and smell so poor, that no attention is paid to the nature of the food after swallowing once commences, and the action is automatic. It is related\* that a pair of large boa constrictors in a zoological garden, having been given some pigeons to eat, both seized on one bird from opposite ends; after the swallowing process started, the female, being the larger, swallowed her mate who refused to release his hold. This was

\*Bartlett, A. D. Proceedings Zoological Society, 1894, p. 669.

commented upon as an evidence of cannibalism, but it was in reality merely the automatic continuation of a mechanical process. The snake finally digested her companion but was much distended and apparently in much discomfort during the process. Another instance is recorded\* of a large python in captivity swallowing a blanket which had become stuck to a piece of meat; in this case the snake died of indigestion. It is possible to induce a snake to swallow a stick or piece of cloth or other indigestible matter if the object is tied to food already in the mouth.

Venomous snakes usually kill their prey by poisoning it, if the animal captured is large enough to offer much resistance; some of the larger snakes squeeze their prey to death by enfolding it in their coils; many species seem to make no attempt to kill their victims but simply swallow them alive.

It should be noted that all snakes have teeth, but that in the non-venomous kinds these teeth are used merely to keep the food from slipping out of the mouth and to force it down the throat; the teeth may be of various shapes and lengths but are never connected with poison glands. In our venomous reptiles, such as the rattlesnake, the poison apparatus consists of a pair of long, sharp, curved, needle-pointed fangs, located on the upper jaw and capable of being folded back against the roof of the mouth and covered by a sheath when not in use; these fangs are hollow and are connected with glands which secrete a poisonous fluid which flows down through the tooth and escapes through a hole near the tip.

In locomotion on land, the snake moves either by pressing the scutes against the surface over which it is traveling, a case of "walking on its ribs," or by throwing its body into a series of undulations and pushing with each of the curved portions. Apparently the longer the animal and the more curves it can throw its body into, the faster it can travel, and some snakes can glide in this fashion very rapidly, but all of them have great difficulty in moving over a smooth surface which offers no traction to the scutes. Many snakes swim rapidly and well.

\*Cambridge Natural History, p. 603.

in fact, with the watersnakes this is the chief method of locomotion.

Some snakes are oviparous and some are viviparous. Of our Kentucky species, the blacksnake and milksnake are examples of those which lay eggs, while the garter snakes and water snakes represent forms which bring forth their young alive. Young snakes of both types are wonderfully active and alert almost from the moment of hatching or birth.

Most snakes hibernate or "hole up" in the winter in this State, but a few species remain active throughout the year except in most severe seasons. The hibernation usually consists of

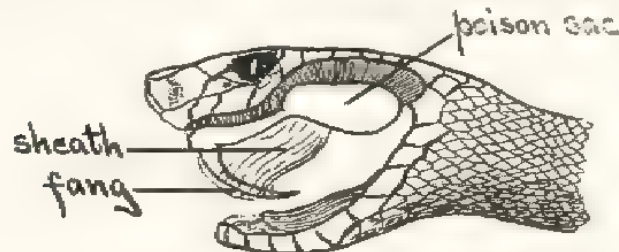


Fig. 41 Drawing by J. E. Taylor

POISON APPARATUS OF A SNAKE

Note the fangs partly closed in a sheath and the poison glands in the head

burrowing in the earth or creeping into deep crevices in the rocks, often many individuals in one mass, and remaining more or less dormant during the cold weather.\*

Snakes are all cold-blooded and love warmth. They may usually be found basking in the sun in the early Spring, on rocks or against the rails of railroad tracks which have been warmed by the sun's rays. In carrying snakes about in cold

\*An interesting record of this habit of various kinds of snakes hibernating together is furnished by Professor G. H. Vansell of the University of Kentucky.

In November, 1917, workmen who were preparing the roadbed of the Southern Railroad for double track blasted a rock ledge about one and one-half miles south of the Lexington Station. In this ledge were found eleven large snakes, which included specimens of the blacksnake, gartersnake, kingsnake and milksnake. Professor Vansell's notes at the time record that "the eleven snakes filled a half-bushel measure when brought to the laboratory."

It is interesting to remember that the winter which broke almost immediately following this date was one of the most severe ever known in this section of the State. The idea is at once suggested that possibly the snakes had been able to forecast this unusual condition of climate and were willing to make strange bed-fellows for mutual protection against the cold.

weather, the writer usually puts them inside his shirt where they always seem quite content, being kept warm by the heat of the body.

Practically all snakes, no matter how harmless they may be, will writhe and fight and bite when first captured, since of course their natural instinct is to try to escape from their enemy. Consequently the collector may expect to have his hands somewhat scratched up during the collecting season. Moreover, snakes are surprisingly athletic and can exert an amount of strength and agility out of all proportion to their size, so that it is no small task to confine or carry them successfully in the field. If the collector attempts to place his living snakes in a sack or collecting case, he will find that whenever he tries to put a newly caught specimen into the receptacle some of the previous captives will likely escape during the process. The most convenient method of overcoming this difficulty with harmless forms which has been tried has been to wear an old sweater tightly belted about the waist and closefitting at the neck. As each reptile is captured, it is dropped down the neck of the sweater and allowed to adjust itself to its own comfort against the wearer's body. Aside from the squirming of the specimens and an occasional nip of the skin, no inconvenience is experienced by the collector and both hands are left free for action.

#### VENOMOUS AND NON-VENOMOUS SNAKES

There is much popular misinformation regarding the ways by which venomous snakes may be distinguished from harmless ones. Most of these methods have to do with the shape of the head, the bluntness of the snout, the sharpness of the tail, or the coloration, and are not at all to be relied upon. It is true that some poisonous snakes have a broad and triangular head, but so do many harmless ones; it is true that certain venomous species have a blunt and somewhat upturned nose, but so does the perfectly harmless spreading viper. It is not safe to rely on the usual directions as stated by the layman in this matter.

So far as the poisonous snakes of Kentucky are concerned, there are very simple and easily determined characters which will serve to distinguish them from the harmless forms, since our three poisonous snakes, the copperhead, rattlesnake and



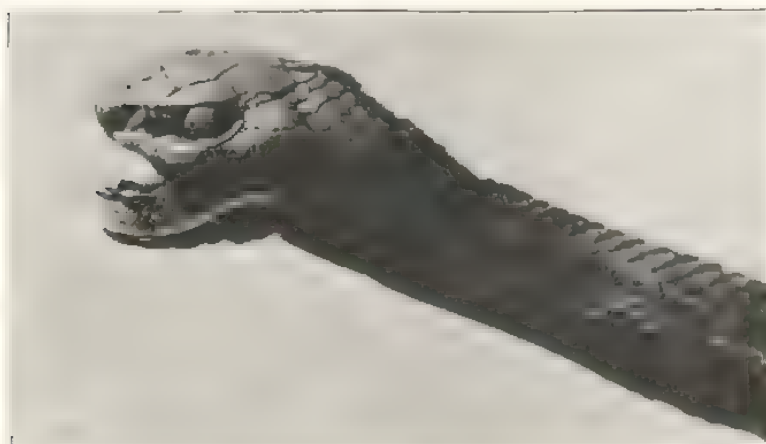


FIG. 42  
HEAD OF VENOMOUS SNAKE SHOWING PIT  
A side view of the head of a copperhead. Note the indentation between the eye and the nostril.



Drawing by J. B. Taylor

FIG. 43  
UNDERSURFACE OF TAILS OF VENOMOUS AND  
NON-VENOMOUS SNAKES  
Above, the single scutes just behind the anus in a venomous reptile, and  
below, the double row in the harmless form.

water-moccasin, all belong to the so-called "pit-vipers." The most certain of these characters is of course the long curved fangs on the upper jaw of these snakes; no non-poisonous snake has these fangs. Another certain character is the pronounced pit or indentation on the side of the head of these venomous snakes about midway between the eye and the nostril; this does not appear in any of our non venomous species. Also, in the pit-vipers the scutes are single behind the anus; in our harmless species they are in a double row in this region as in the



FIG. 44  
HEADS & SUTELLATION OF A VENOMOUS AND A NON-VENOMOUS SNAKE  
That on the left is the dangerous water moccasin (*Agkistrodon piscivorus*) and on the right is the harmless water snake (*Natrix fagei*).

accompanying figure. Again, the head scutellation is quite distinct in the two groups as may be observed by comparing the figures of the head of the harmless water-snake with that of the moccasin. These are all real scientific characters and should be used instead of the more commonly advocated "sure ways" of distinguishing between a snake which is dangerous and one which is not.

## TREATMENT OF BITES OF VENOMOUS SNAKES

There is no question but that the bite of any one of our three venomous snakes may lead to serious consequences. It is far from true that persons so bitten are almost sure to die for such cases are rare, but death does sometimes result and it is extremely unwise to consider such wounds as unimportant. In this connection, also, there are many popular "cures" for snake-bite which have no scientific value. Many of these "remedies," in fact, are not only absolutely worthless but very unsanitary if not positively harmful. Examples of such treatments are the application of the warm blood or the dead bodies of certain animals or curiously shaped stones to the wound.

The wide-spread notion that large doses of whiskey are a "sure cure for snake-bite" is not true and has probably arisen from instances in which persons who were bitten by perfectly harmless snakes have drunk large amounts of whiskey and have "recovered" (from the effects of the whiskey) with the firm belief that the whiskey saved their lives. Large amounts of whiskey simply benumb the faculties, reduces the system to a condition most susceptible to the action of the poison, increases the circulation and carries the poison through the body faster than it would ordinarily go. It is therefore one of the worst things that could be used as first aid. On the other hand, if the poison has already been carried into the system, if some time has elapsed since the person has been bitten and nothing has been done to care for the patient, *small* doses of whiskey will serve as a stimulant and will tend to counteract the paralyzing action of the venom. But any stimulant had best be administered under the direction of a physician, and even as a stimulant, ordinary aromatic spirits of ammonia will serve as well if not better than whiskey.

Little is known about the venom of snakes, either as to its chemical composition or as to its action on the tissues. It is, however, a powerful and dangerous poison and a few simple and practical suggestions may be offered regarding the treatment of the bite of a venomous snake in case of accident. The first thing to do is *to send for a physician*. If, however, as often happens, no medical attention can be secured, the following

treatment is advisable: (1) If the bite is upon the arm or leg, as it is in most cases, apply a ligature to shut off the flow of blood from the rest of the body. It should be remembered, however, that it is dangerous to leave a tight ligature on for any considerable length of time. (2) Cut open the wound with a razor or sharp knife and allow the poison and the poisoned blood to escape. The cut should be made across the wound and should be deep and clean. The drainage of the wound may be aided by suction from the mouth, provided there are no cuts or sores on the lips or tongue. (3) Wash the wound thoroughly with a solution of potassium permanganate, made by dissolving the crystals in water until a deep red color is secured. (4) After the wound has been thoroughly bled and has been oxidized by the permanganate, take off the ligature. (5) Bind up the wound with a wet antiseptic dressing such as gauze or clean cloth saturated with iodine, leaving small strips inside the cut to keep the wound open and induce further drainage. (6) Remember that the deadening effect on the tissues renders the wound very susceptible to common blood-poisoning, and that every effort should be made to prevent infection. If the above measures are carried out at once and thoroughly, they should prove effective. Of course the wound should be permanently dressed and cared for by a physician as soon as possible. The writer has been bitten by both copperheads and rattlesnakes and has found these methods entirely satisfactory.

The venom of snakes retains its virulence for a long time after the animal is dead and even after the venom is removed from the body. It is therefore unwise to handle dead venomous reptiles unless great care is taken not to get accidentally scratched by the fangs. Cases have been recorded of students suffering severe injuries by carelessly handling preserved specimens. The jerking of the body of a dead snake due to reflex action may bring the fangs in contact with the flesh of the careless investigator and cause injury. Dried venom keeps indefinitely and is soluble in water. Various savage tribes have long known this fact and use the venom on their arrow-heads and spears.

## POPULAR SUPERSTITIONS

A volume might be written on the popular superstitions and traditions regarding snakes, but we can mention here only

a few of the most common and our comments on them must necessarily be brief.

The "hoop-snake" is supposed to be a snake which takes its tail in its mouth, rolls along like a hoop to chase its prey, strikes the victim with its poisonous tail and even "kills a tree if it strikes it." There is no such snake.

The "joint-snake" or "glass-snake" which may be broken into fragments only to have the pieces reunite after they have been scattered. A foolish story based on the habit of the lizard, *Ophisaurus ventralis*, which sacrifices its tail in order to escape its enemy. This has been described in the preceding section in the discussion of that lizard.

The "whipsnake" which lashes its victim to death with its tail. Pure nonsense.

"Stinging" of snakes. Snakes do not sting. When they bite they do so with their teeth and if they are poisonous the fangs which are in the mouth are used. Teeth are the only organs of offense and defense in snakes. There is no "stinging" organ on the tail or elsewhere.

The "horn-snake" which has a deadly horn on the end of its tail with which it strikes. A negro superstition regarding the common Red-bellied Snake, *Farancia abacura*, which has a tiny spine on its tail. It is perfectly harmless.

The "blue racer", a terrible venomous snake which chases any individual so unfortunate as to cross its path and which has such marvelous speed that it can, and often does, outrun a horse and kill the rider. This superstition is doubtless based on the fact that certain blacksnakes just after a molt have a beautiful bluish metallic luster. At this time also, it is almost blind, since the old scale over the eye is the last to be shed and is opaque. When in this condition the snake is extremely timid and will dash off like a flash if disturbed. Since it does not see well, it is just as likely as not to move in the direction of the observer, but its only motive is to escape as quickly as possible. It is certainly fast and well deserves the name of "racer" but is entirely harmless.

Snakes "jumping" at their prey, sometimes for great distances and sometimes from great heights. A physical impossi-

bility. Snakes can not jump. If badly frightened, a snake may fall off a cliff or down a bank but it does not "leap" upon its prey.

"Cow-sucker" snakes which milk cows by sucking all the milk from their udders. A foolish notion which is discussed in the account of our common milk-snake in a following section.

"Snake charmers" or persons who possess a strange power over venomous reptiles which enables them to handle these reptiles with impunity. The so-called "snake-charmers" of the circus usually have tame snakes (and generally non-poisonous ones) which have become so accustomed to being handled and are so well fed and stupid that they seldom bite. They enjoy being placed against the warm body of the "charmer"—who usually boasts an extremely abbreviated costume—just as they would enjoy a steam-heated post in their cage if such were provided them—but of course a post would not have the same effect on the public for advertising purposes. The very large serpents usually seen in shows and circuses, such as boas and pythons, are not poisonous, but naturally attract more attention than would some of the small venomous species. There are persons, however, who actually handle rattlesnakes and other poisonous snakes. These persons take big chances and usually pay the penalty for their foolhardiness in the end; they well deserve their salaries. There are also undoubtedly persons in India who commonly handle the cobra—one of the most deadly of all snakes. How they do it is not known.

"Horse-hair" snakes. A parasitic worm often found in horse-troughs which is hairlike in appearance and which ignorant persons suppose to be a horse hair which has "come to life".

Snakes "stinging with their forked tongues." Absolute nonsense. We have actually known persons who would catch a harmless little garter-snake, pull its tongue out by the roots (imagine the torture of having one's tongue torn out by the roots) and then release the suffering little creature with the triumphant boast that they had "pulled its sting" and it could now do no harm. Of course the snake would die in a short time in great agony. We can not protest too strongly against such a cruel and senseless performance. The tongue of a snake



is a delicate, sensitive organ of touch and could not possibly injure anything. All of the superstitions about its "wickedness" and "evil" powers are pure rot.

"Pulling the teeth" of venomous snakes. The fangs of poisonous snakes may be pulled out or broken off, but if this is done, new ones take their places in a short time. Snakes can not be rendered permanently harmless by the mutilation of the fangs.

"Removal of poison sacs". The glands which secrete the venom may be cut out or mutilated but we have never known a snake to recover from this operation. It is not, as is often supposed, a common method of rendering snakes harmless.

Snakes "living 'till the sun goes down" after they are apparently killed. As in other cold-blooded animals, the muscles of the snake will continue to jerk by reflex action long after the animal is dead. The same thing is true of the frog as is well known by anyone who has prepared frog-legs for cooking. This jerking continues for an indefinite length of time and has nothing to do with the sun.

"Snakes crushing swallowed eggs by wrapping their bodies around trees and squeezing." We have often heard this statement made and have no reason to doubt it, but we have never seen this performance.

Snakes "charming" their prey. A wide-spread and oft-repeated belief that snakes possess some mysterious hypnotic power over birds and other animals which renders the victim helpless before their attacks. This is really a moot question. Daugherty states:

"They charm birds, probably by paralyzing them with fear, until they can creep up and catch them. The author attracted the attention of a charmed bird from its gaze upon the snake, and the bird immediately flew away."<sup>\*</sup>

On the other hand, Ditmars states:

"All this, unfortunately for the writer of romantic snake stories, must be exploded. ....Concerning the

snakes' power of hypnotism or 'charming,' suffice it is to say that there are none."<sup>\*</sup>

We have heard these stories of the charming of birds by snakes, especially blacksnakes, many, many times, related by persons whose powers of observation, intelligence and veracity could not be questioned. Professor A. M. Miller, of the University of Kentucky, and Mr. R. L. Boyd, of Hart County, have both told the writer only recently of cases in which a bird certainly seemed to be fascinated in some way by a snake so that it appeared entirely helpless. In both cases the observer freed the bird. In our own experience, which includes a rather large amount of field work, we have never seen this phenomenon, although we have often seen birds caught by snakes. Certainly we can offer no scientific explanation of the performance. Snakes have a very low order of brain and very poor sight; there is nothing to indicate "hypnotic" powers. Their victims, also, could hardly be supposed to have the necessary concentration to become "hypnotized". It seems more reasonable to explain this theory either on the basis of fear or on the assumption that the birds rashly get too close to their enemy. It is not improbable that animals may be so frightened that they are incapable of using their faculties to the fullest extent; even human beings are sometimes "paralyzed by fear." It is equally probable that the maternal instincts of some animals may cause them to lose their discretion. A very interesting explanation of the theory is that given by Ditmars as follows:

"The theory of fascination as relating to snakes is interesting from the standpoint of the many sensational stories emanating from the belief that the reptiles exert a hypnotic power in obtaining birds and small mammals. Certain observers insist that they have seen the snake robbing a bird's nest and after the young have been swallowed, the parents fluttered closer and closer, seemingly drawn toward the reptile's jaws by an irresistible power to finally share the fate of the offspring. But this is easily explained.

When a snake robs the nest there is naturally a display of defense on the part of the old birds. In their

<sup>\*</sup>Daugherty, L. S. Principles of Economic Zoology, 1917. p. 241.

<sup>\*</sup>Ditmars, R. L. The Reptile Book. p. 231.

persistent efforts to drive the intruder away, they are frequently bold enough in their advances to peck at the snake's head, when they are seized and eaten. The fluttering toward the snake displays merely the parent's frenzied attempts to protect the home and young.

There are few of us that have gone into the woods that have not noticed the fluster raised by the parent birds when an intruder approaches the nest. Flying down from branch to branch, until they are but a few feet over one's head, they watch every movement of the person beneath. Their actions are very similar to those displayed in the case of the prowling snake, only from the human, they naturally keep a greater distance—with the reptile they are much bolder.

While rowing along a creek in Connecticut, the writer observed an example of "charming" on the part of a snake. Hearing a great chatter raised by a blackbird, he beheld a large water snake stretched lazily on a bush, and within a few feet of the bird's nest. Water snakes do not eat birds and the serpent had climbed into the bush for the sole purpose of a sun-bath. Fluttering back and forth in front of the reptile, the mother endeavored to drive the serpent away, but to no avail. At length she flew directly toward the intruder and perched upon a branch not a foot from the snake's head, where she danced about and raised such a disturbance that the snake slid disgustedly into the stream and swam away to hunt another resting place. If the serpent had been a bird-eating species, it could easily have grasped the foolish parent and made a meal of her."<sup>\*</sup>

Snakes "swallowing their young." The belief that young snakes in time of danger will run into their mother's mouth and remain there until the danger is past. This is also a moot question. Hegner states positively:

"The idea that they swallow their young in order to protect them and then spew them out again when the danger is passed is erroneous."<sup>†</sup>

But equally eminent authorities claim that this is actually done. Dr. Ball has given a very interesting account<sup>‡</sup> of an instance of this remarkable performance of which he was an eye-witness. Many others are insistent that this occurrence

is not unusual. On the whole, although the writer has never seen an exhibition of this sort, we believe that the evidence would indicate that, it actually takes place.

Snakes "committing suicide" by striking themselves with their fangs. Doubtless true, but probably does not often happen. It was formerly believed that venomous animals were immune to their own poison and the classic belief that the scorpion "girt by fire" darts her sting "into her desperate brain" to escape her misery was considered mythical. More recent experiments and observations would indicate that it is perfectly possible for poisonous reptiles, at least, to become victims of their own venom. Dr. Glanville Terrell, of the University of Kentucky tells the writer that as a boy in Virginia he has often irritated copperheads until they struck them-

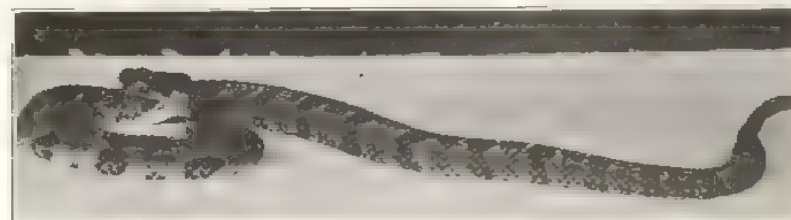


Fig. 45  
RATTLESNAKE "COMMITTING SUICIDE"  
A small timber rattler which died after biting its R, as shown in this photograph.

selves in fury and died. A case which came under our own observation in the laboratory during the past year bears out this theory. A small timber rattlesnake, which never became reconciled to its life in captivity, suddenly turned and buried its fangs in its own body. It died without changing its position in about an hour. The accompanying photograph was taken to show the attitude assumed by the snake and the position of the fangs.

The "smell" of snakes. The idea that certain snakes may be recognized and their presence in a locality determined by their odor. Entirely probable. Some snakes have a very characteristic odor which is probably of value to the animal during the mating season in assisting the sexes to trail each other

<sup>\*</sup>Ditmars, R. L. Reptile Book, p. 313.

<sup>†</sup>Hegner, R. W. College Zoology, p. 559.

<sup>‡</sup>Ball, E. D. Iowa Academy of Science p. 343.

through the grass. There is no reason to doubt but that a person with an acute sense of smell who was very familiar with the reptiles might be able to recognize such an odor, particularly in the case of certain of the colubers. We have known a native of a southern swamp who claimed to be able to recognize the close proximity of a rattlesnake by its odor, and we believe that we could recognize a fox snake in the same way.

Snakes "covering their prey with saliva before swallowing." An erroneous idea probably originating in the fact that some snakes will disgorge the animal which they have swallowed in order to more quickly and easily escape from an enemy. The animal thus disgorged will be of course covered with digestive juices and more or less slimy, but the snake does not "lick it to make it go down easily" as is often stated. Snakes do, however, often carefully examine the prey with the tip of the tongue before swallowing, apparently to ascertain its size and the location of the head.

"Blacksnakes eating certain weeds to cure rattlesnake bites." This has been stated as a fact by many observers. The weed most commonly mentioned is the common jewel-weed or snap-dragon (*Impatiens biflora* or *pallida*). Professor G. D. Smith of Richmond, Ky., in an address to the Kentucky Academy of Science in 1921, described in detail a battle between a blacksnake and a rattlesnake of which he was an eye-witness, in which the blacksnake went through this performance several times. Many authorities discredit the tradition. We have never seen such a performance and have never known the two species of snakes to fight even when confined in the same cage.

"Deadly hatred of kingsnake for rattlesnake." There is no question of the enmity between these two snakes. We have known a kingsnake to kill and swallow a rattlesnake when both were placed in the same cage. Apparently the kingsnake is immune to the rattlesnake's venom, so that the fangs of the latter reptile are useless against his more powerful enemy. Whether the kingsnake actually goes out of its way to pick a fight with a rattlesnake we do not know, but if the two reptiles meet by accident the kingsnake does not hesitate to accept battle.

#### ECONOMIC IMPORTANCE OF SNAKES

From an economic standpoint, snakes may be divided into three groups: (1) those which are actually harmful to man, (2) those which are neither harmful nor beneficial, and (3) those which are positively beneficial. Of these, the first group is much the smallest, and the last by far the largest.

The group in which each of our Kentucky snake belongs will be indicated in the discussion of the different species in the next section of this report. We may state here, however, that in this State we have only three (possibly four) snakes which come under the first head, two or three under the second, and all the rest under the third. That is, practically all of our snakes are really of value to man and should be protected.

The chief way in which snakes are beneficial is of course in their destruction of various pests, particularly insects in their different stages of metamorphosis, and rodents. The annual toll taken by our bugs, caterpillars, weevils, beetles, grubs, cut-worms and grasshoppers is enormous; the annoyance caused by such insects as flies and mosquitoes, not to mention the diseases for which they are responsible, is considerable; the damage done by rats and mice is great; any animal, therefore, which assists us in getting rid of these enemies is valuable.

It is extremely difficult to make the average person appreciate the fact that most of our snakes should be considered friends of man; to the average individual "a snake is a snake" and no mercy is shown to any of them. This attitude is of course most unfortunate and unscientific and it is hoped that it may be changed. Another class of persons consists of those who profess a deep-seated hatred of all snakes and show a blind prejudice against any facts which would tend to show the value of these animals, who declare that in spite of all scientific evidence, all snakes are dangerous, who throw up their hands in pious horror at the very mention of a serpent and insist that they are all "enemies" of the human race; with such persons, of course, it is a waste of time to argue.

#### DESCRIPTIVE TERMS

In the technical description of snakes it is necessary to use

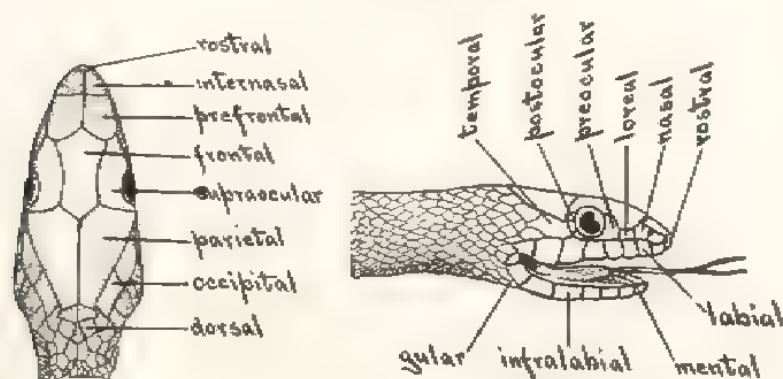


a few terms which should be explained. The most important of these are the following:

**Rows of scales:** The scales on the back and sides of the body are arranged in more or less regular rows; the number of rows and the position of the scales is important.

**Structure of scales:** The scales may be smooth or rough; shining or dull; keeled (ridged) or non-keeled; pointed, rounded or notched. These conditions constitute taxonomic characters.

**Markings:** The markings and coloration of snakes is one of the most confusing of characters since they are so hard to describe and often so variable within a species. It often happens that such markings may be very evident in young specimens and practically absent in old. It is customary to speak of the ground



Drawing by J. B. Taylor

FIG. 46  
HEAD SCUTELLATION OF A SNAKE  
Showing the plates on the top and on the sides of the head

color and to describe the position and shades of the markings on this ground color, particularly the rows of scales on which they occur.

**Plates of the head:** One of the most valuable of all characters. The head plates are divided into arbitrary groups and are named as in the accompanying figure. Most of the names given to the plates are self-explanatory and the student should

be perfectly familiar with these terms if he expects to intelligently interpret descriptions.

**Scutes:** The broad transverse plates on the abdomen. The number of these and their coloration is often mentioned. Sometimes the number in front of the anus (i.e. those on the body) and the number behind the anus (i.e. those on the tail) is indicated.

**Anal plate:** The plate immediately behind the anus may be entire or divided. This is an excellent character in some groups.

**Length:** Figures given are for the average adult. Naturally these have to be given between reasonable limits to allow for normal variation.

#### LIST OF SPECIES

##### 1. *Thamnophis sirtalis* Linn.—Common garter snake.

**Description:** Length 30—35 in.; both jaws provided with small, sharp, conical teeth; no poison fangs; dorsal scales not



FIG. 47  
A GARTER SNAKE  
The commonest snake in Kentucky. Entirely harmless and should be protected

keeled; anal plate entire; scales in 19 rows; width of head about the same as greatest width of body; body slender; ground color brown, olive or black with three longitudinal, greenish-white stripes, the dorsal stripe narrow, the lateral stripes broader, occupying the second and third rows of scales and often indistinct; generally rows of small spots between the stripes; abdomen greenish white or yellow with two rows of small black spots on the edges of the scutes.

**Distribution:** Extremely abundant in all parts of the State.

**Records:** Since this snake is very common everywhere, a record of localities would be simply a list of the counties of the State. It is our commonest snake.

**Remarks:**

This very well known little snake is extremely hard to describe since it shows so much variation that a description of one specimen will seldom exactly fit another. We have seen some with the stripes so faint that they could hardly be distinguished; others with the central stripe very distinct and the lateral stripes obsolete; some with distinct stripes and faint dots, others with prominent dots and faded stripes; some on which the rows of dots between the stripes were strong and jet black, others with these dots missing; some with brilliant colors, others very dull. These various forms have been assigned by different authorities to a number of subspecies and varieties but they seem to show gradation between types of coloration to such an extent as to render the validity of these subdivisions very doubtful. Some of these forms may represent distinct subspecies or varieties and some may be geographical races, but until much more work is done on the group and more of the intermediate forms are available for study, we prefer to lump them all under the name which has been given to the typical form. For ordinary purposes of classification, the presence of 19 rows of scales, the three pale longitudinal stripes on a darker ground and the scutellation of the head as represented in the accompanying figure will suffice.

The common garter snake is an extremely hardy little reptile. In this State it often remains more or less active all winter and even when, in occasional severe winters, it does hibernate, it is the first snake to appear in the spring and the last to retire in the fall. A newspaper account (Elizabethtown News) states: "James Tharp claims the honor of killing the first snake hereabouts. He killed a garter snake on cemetery hill on New Year's day." Another press report (Vaneenburg Sun, Jan. 25, 1921) notes that "George Hickie, of Quock's Run killed a two and one-half foot garter snake. It was crawling over the snow." Such records are quite common. It is perfectly harmless, not very timid, is easily tamed, and makes an interesting pet. When first captured it may writhe and bite in its attempts to escape and has the habit of voiding its excretions and giving off a disagreeable odor when first handled. It soon gives up these

habits in captivity, however, and becomes quite friendly. Its bite is often deep enough to break the skin and draw blood, but it is no more to be regarded than the scratch of a pin.

It feeds on earthworms, young frogs and toads and the larvae of insects. We have never been able to induce it to eat adult insects or mice, so that it is probably not a very beneficial snake, although a perfectly harmless one. It stays on the ground and in holes. We have an interesting clipping from the Wilmore Enterprise (September, 1921) which contains the following:

"J. A. Buck, who has charge of the pike from Brooklyn to Shakertown, is digging holes along the river cliffs for a guard fence. The holes are three and a half feet deep. On last Tuesday morning when he went to work he found two snakes had fallen into the same hole during the night and could not get out. He killed them both. They were garter snakes and each about two feet long."

It is noteworthy that newspaper accounts bear witness to the fact that these little snakes usually suffer the death penalty when caught.

The garter snake is viviparous and produces large broods of living young, ranging in number from ten to seventy at one time. The young are wonderfully active as soon as they are born and in fact will attempt to escape if dissected shortly before birth from the body of the mother.

This is one of the harmless little creatures which is so often clubbed to death or brutally tortured by ignorant persons who think that they have performed acts of especial bravery and service by destroying the life of an innocent animal.

## 2. *Thamnophis proximus* Say—Ribbon snake.

**Description:** Length 20—30 in.; scales keeled; anal plate entire; scales usually in 19 rows; head not so wide as the greatest width of body; body blackish with three longitudinal stripes, the dorsal stripe usually yellow, the lateral stripes green and located on the third and fourth rows of scales; abdomen white with no spots; tail two-sevenths of total length.

**Distribution:** Central and western part of State.

**Records:** Woodford Co.; Anderson Co.; Fayette Co.; Daviess Co.; Henderson Co. (W. D. F.)

*Remarks:*

A close relative of the common garter snake but easily recognized by the fact that the lateral stripes are always a different color from the dorsal stripe. It differs also in being smaller, having a narrower head, in having no blotches on the abdomen, and in having the lateral stripes on the third and fourth rows of scales instead of on the second and third.

In habits the ribbon snake differs from the common garter snake in that it prefers wet, marshy ground and in being perfectly at home in the water. It swims well and is an excellent diver. Its food, also, is more largely aquatic, consisting of fish and tadpoles as well as toads, frogs and worms. It is very active and is much more difficult to capture than the garter snake, being less given to hiding and being swifter in movement.

It brings forth its young alive, but the number in a litter is smaller than in the preceding species.

### 3. *Thamnophis radix* B. & G.—Plains garter snake.

*Description:* Length 25—35 in.; scales rough and in 19—21 rows; body dark brown with three narrow yellow longitudinal stripes, the lateral stripes on the third and fourth rows of scales; generally two rows of subquadrangular black spots between the stripes; abdomen greenish with black blotches on edges of scutes; upper lips yellow with black margins; head short; body blunt; tail short, less than one-fourth the total length.

*Distribution:* Western part of State.

*Records:* Union Co.; Livingston Co.; Carlisle Co. (W. D. F.).

*Remarks:*

Much resembling the common garter snake and seems to supplant it along the Mississippi River. It may be distinguished from the commoner species by the rough scales which are often in as many as twenty or twenty-one rows, by the difference in the stripes, and by the fact that it has only seven superior labial plates instead of eight.

In habits it is much like the ribbon snake, frequenting water and being a good swimmer and diver.

Like the common garter snake it produces a large number of living young toward the end of the Summer.

### 4. *Natrix septemvittata* Say—Queen snake.

*Description:* Length 20—25 in.; dorsal scales keeled; anal plate bifid; scales 19—21 rows; about 150 scutes; body dark brown and striped longitudinally with three black stripes on back and a yellow stripe on each side; abdomen yellow with two brown stripes; superior labials and rostral plate yellow.

*Distribution:* Central Kentucky. Rather common.

*Record:* Lexington (H. Garman); Clifton; High Bridge; Tyrone. (W. D. F.).

*Remarks:*

This is a true water snake but seems to prefer ponds and sluggish backwaters to the rivers and swift streams. It is most often found in the bushes and weeds at the water's edge but is an excellent swimmer. It is very vicious and ill-tempered and strikes and bites savagely when captured. It has strong jaws and sharp teeth and can lacerate the flesh to a considerable extent but it is not venomous and is not to be feared.

Like the garter snakes, these reptiles are viviparous and bring forth large numbers of living young, a brood of thirty or forty being not unusual.

### 5. *Natrix sipedon sipedon* Linn.—Common water snake.

*Description:* Length 3—4 ft.; dorsal scales keeled; anal plate bifid; tail not flattened; scales in 23-25 rows; rostral plate not divided; scutes 130—140; body dingy brown with a series of large squarish dark blotches alternating with each other and sometimes uniting with each other to form irregular bands on anterior portion; abdomen sordid white spotted with red and black.

*Distribution:* Common throughout the State.

*Records:* Lexington (A. W. Server); Valley View; Dix River; Boone's Creek; Blue Grass Park; Munfordville. (W. D. F.).

*Remarks:*

This is the common water snake of our streams and ponds. It is found almost everywhere in the State but we have included only a few records because of the fact that when a "water



snake" is reported we can not be sure which species is meant although in most cases it is probably this form.

It is a large, heavy-bodied reptile, dull and dirty in color, and of a most vicious disposition. It is very active and when cornered strikes savagely. We have seldom been able to capture one without being bitten. It swells up its body and flattens its head when angry, and these habits, together with its evil

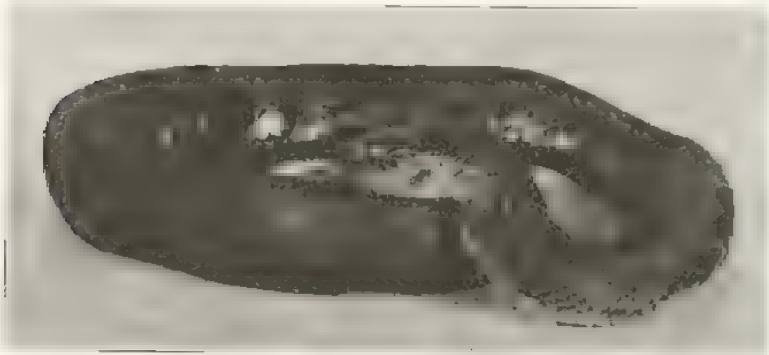


FIG. 18.  
COMMON WATER SNAKE

Abundant along Kentucky streams. Is harmless, but is often erroneously called a "moccasin."

temper, have caused it to be generally known as the water "moccasin" and feared accordingly. It is, however, entirely harmless, except for its ability to bite with its sharp teeth and strong jaws, and the name "moccasin" is most unfortunate since it tends to confuse the reptile with the real water moccasin, which is a very venomous snake.

Its favorite haunt seems to be the bushes and low branches overhanging the water, where it lies in wait for fish or frogs passing beneath or lazily basks in the sun. It is an excellent swimmer and can remain under water for some time, but should perhaps be considered as really semi-aquatic, for it often spends much of its time on land and seems to take to the water only to search for its prey or to escape its enemies. Usually it drops into the water when approached, but sometimes depends on its protective coloration to escape discovery and may be touched before it will move.

Its favorite food is fish. We have taken as many as four fish, each three or four inches long, from the stomach of one snake. It has an excellent sense of smell and its sight is keener than that of most of our snakes, if our experiments to test these senses have been interpreted correctly.

It is viviparous. We have taken thirty embryos from the body of one female.

#### 6. *Natrix sipedon fasciata* Linn.—Banded water snake.

*Description:* Length 2—3 ft.; dorsal scales heavily keeled; anal plate bifid; scales in 25 rows; rostral plate single; body light brown with black or dark brown cross-bands; sides of body reddish; undersurface white or yellowish with red and black blotches; scales 125-130.

*Distribution:* Throughout the State, but not so common as the preceding.

*Records:* Lexington (H. Garman); Blue Grass Park; Camp Daniel Boone; Idlewild. (W. D. F.).

#### *Remarks:*

Closely related to the preceding but smaller and distinguished by the complete transverse bands across the body. The body is very stout and heavy. The head is flat and the neck is quite distinct. There is considerable variation in colors and some specimens look much like the common water snake.

They are very shy and very active and are hard to capture. When caught they will fight viciously, at the same time giving off a disagreeable odor. After they have been kept for awhile in captivity, however, they become quite tame and do not object to being handled. They are very hardy and can live for a long time without water.

Apparently they are not very common in Kentucky, but it may be that they are usually supposed to be the common water snake and so not especially noticed.

They feed chiefly on fish, but a specimen taken at Idlewild had three young toads and the remains of a frog in its stomach. They are said never to eat a warm-blooded creature, such as a bird or a mouse.

Their habits are about the same as those of the common

water snake. Like all other snakes of this genus, the young are born alive, broods of from forty to fifty being commonly reported.

**7. *Natrix sipedon erythrogaster* Forst.—Red-bellied water snake.**

*Description:* Length 2—3 ft.; scales strongly keeled and in 23—24 rows; head narrow; no distinct neck; body uniformly dull rusty brown above; abdomen bright brick red; scutes 120—130; anal plate bifid.

*Distribution:* Common in all parts of the State.

*Records:* Lexington (H. Garman); University of Kentucky Campus (L. Moore); Kentucky River between Woodford and Anderson Counties. (W. D. F.).

*Remarks:*

We believe this snake to be almost as abundant throughout the State as the common water snake with which it associates, and although we have few actual records, we have listened to so many descriptions of "the water moecasin with the red belly" that we are convinced of its wide distribution. Of course the snake is not a true moecasin, but is closely related to the common water snake and is harmless.

It can be recognized at once by the red undersurface which gives it its popular name and by the lack of markings on the back of adult specimens. Very young specimens show distinct cross-bands on the dorsal surface, but these disappear with age.

In habitat, habits, and life history it is about the same as the common water snake.

**8. *Storeria occipitomaculata* Stor.—Ground snake, brown snake, red-bellied ground snake, red-bellied brown snake, Storer's snake.**

*Description:* Length 8—10 inches; dorsal scales keeled; anal plate bifid; scales 15—17 rows; loreal plate absent; body brown or grayish brown above; abdomen bright red; back of head showing three pale spots; scutes 120—130.

*Distribution:* Apparently rare.

*Records:* Near Mammoth Cave (B. F. Shumard).

*Remarks:*

A little ground snake which has been reported but once from the State and that by Cope in the list of specimens in the National Museum with the data as above.

This little snake belongs to a group known as the "ground snakes" or "brown snakes" all of which are noted for their small size and their secretive habits. These snakes live more or less sub-terrestrial lives and since in addition to this they avoid the light, are very shy, and are protectively colored, they are not often seen even where they are common. It may be that they are more abundant in the State than the single record would indicate, and herpetologists should be on the lookout for a new record (the date of Dr. Shumard's record is not known, but it was over twenty-five years ago).

They may be looked for under flat stones, under old logs, beneath pieces of bark, and in lumber piles. The colors are somewhat variable but in general they may be recognized by their diminutive size, brown back and red belly.

They feed on earthworms and the larvae of insects. They are viviparous and the newly born are so tiny that it has been said of them "a large earthworm appears quite gigantic in comparison."

**9. *Coluber constrictor constrictor* Linn.—Blacksnake.**

*Description:* Length 4—6 ft.; dorsal scales smooth and in 17 rows; body slender in proportion to its length; tail very long; head rather distinctly set off from neck; eyes very large; color solid black, both above and below, except the chin and throat, which are white; anal plate bifid; scutes 180—190.

*Distribution:* Very abundant throughout the State.

*Records:* (By counties) Ballard (E. W. Whalen); Bath (C. F. Martin); Boone (K. Tanner); Bracken (P. J. Arnold); Breathitt (G. W. Thompson); Bullitt (J. H. Sanders); Calloway (J. B. Gardner); Campbell (A. B. Regenstein); H. F. Link; Carlisle (B. A. Hensley); Casey (C. Lucas); Clay (L. A. Clark); Clinton (W. M. Watkins); Crittenden (J. R. Spencer); Cumberland (C. S. Payne); Daviess (J. W. Whitehouse); Edmonson (W. G. Bullinger); Elliott (H. H. Mayse); Fayette (L. Moore); Fleming

(H. F. McKenny); Fulton (O. L. Cunningham); Gallatin (F. Irwin); Graves (B. H. Mitchell); Grayson (J. S. Hughes); Green (J. A. Howard); Hart (J. S. Pullen); Henderson (D. W. Martin); Henry (C. Fishback); Hickman (L. Jackson); Hopkins (M. M. Gordon); Jackson (W. R. Reynolds); Kenton (C. A. Wicklund); Knott (A. Campbell); Knox (E. Mayhew); Larue (J. N. Jones); Laurel (F. B. Wilson); Lawrence (G. C. Baker); Leslie (G. Morgan, G. Stidham); Lewis (R. O. Bate); Lincoln (C. B. Elston); Livingston (C. G. Lemon); Logan (W. R. Whitlow); Marion (H. J. Childress); McCracken (J. R. Bird); McLean (R. H. Ford); Martin (E. Cassidy); Morgan (R. B. Rankin); Muhlenberg (F. O. Townes);



Fig. 49

## THE BLACKSNAKE

A slender, graceful, powerful snake. A good fighter but not at all poisonous

Nelson (C. L. Hill); Ohio (J. Hughes); Oldham (G. B. Nance); Owen (D. P. Morris); Owsley (P. M. Frye); Pike (W. M. Wesley); Pulaski (W. C. Wilson); Taylor (J. L. Miller); Union (A. M. Allen); Washington (R. M. Heath); Webster (L. E. Cutler); Wolfe (W. R. Sebastian).

(Special records): Midland (H. Garman); Nicholasville (M. Dean); Yoder (J. N. Reynolds); Madisonville (F. Burton, H. Jones); Mayo (S. Newby); Oakland (C. B. Wilson).

## Remarks:

One of the best known, most easily recognized, and com-

monest of our snakes. The slender, graceful, black body with the white throat, the speed with which it travels when disturbed, its propensity for robbing birds' nests, and the fact that it is our largest common snake, are the characters by which it is best known to every agriculturist.

The habits and life-history of the blacksnake are too well known to residents of Kentucky to require any detailed description. It is a fine, large, powerful snake, extremely active, very speedy, and a good fighter when cornered. It is entirely harmless and is really quite shy, but when enraged will raise its head some distance from the ground and strike and bite savagely. Its strong jaws and sharp teeth can inflict quite a severe wound. We have had it bite through coat and shirt sleeve and draw considerable blood from the arm in its attempt to escape when first caught. After being in captivity for awhile, however, it becomes quite tame. It makes a good house pet and is guaranteed to rid the premises of rats and mice if so adopted, although it has the habit of occasionally appearing in rather unexpected places, such as one's bed, or clothing, or in the closets, to be consternation of unsuspecting guests. It has been known when tamed to show a real fondness for its owner, following him about and eating out of his hand.

The blacksnake is practically omnivorous, eating almost every kind of small animal, and we have found a wide variety of foods in its stomach. We are sorry to say that in many cases this food has consisted of songbirds and their eggs, for blacksnakes are excellent climbers and are notorious robbers of nests. To make up for this deplorable habit, however, they capture large numbers of rats, mice, and moles, and there is no question but that a blacksnake around the corn-crib or barn is worth considerable to the farmer. They are said to be especially fond of milk.

In spite of its specific name, herpetologists insist that the blacksnake is not a constrictor, that is, that it does not squeeze its prey to death. Ditmars makes this as a positive statement\* and Holbrook was of the same opinion.† Yet we have found on two separate occasions that animals taken from a blacksnake—

\*Ditmars, R. L. Reptile Book, p. 281.

†Cambridge Natural History, 1909, p. 613.



in one case a young rabbit and on another a meadowlark—had many bones in their bodies badly crushed although the snake had not yet started to swallow them. We also believe that we have seen a blacksnake actually crushing a little chicken by wrapping its folds around the body and squeezing, although we were not able in this instance to secure either the snake or its victim. Certainly we have had a blacksnake exert a powerful pressure by wrapping around our arm in its struggles to escape, and Cope states:

"The contracting power of a blacksnake is not sufficient to cause inconvenience to a man, but might seriously injure a child. The pressure exercised by a strong individual wound round the arm is sufficient to compress and close the superficial veins, and cause the muscles to ache, but it is easy to unwind the snake with the free hand and arm."<sup>\*</sup>

We know of a case of a farmer's wife who, while seated in a chair outside the house beside the kitchen door shelling peas, felt what she supposed was the cat rubbing against her ankles. She paid no attention to it for a few minutes, but finally, on glancing down, discovered to her horror a large blacksnake wrapped round her feet and ankles. Her struggles to free herself seemed to make the snake wrap all the more tightly about her legs and it was some minutes before she could extricate herself from its coils. On the whole, we believe that while this may not be its usual procedure, the blacksnake does occasionally actually squeeze the object to be swallowed.

The economic importance of this snake is a debatable question. It is beneficial in that it destroys large numbers of rats, mice, moles and other pests and it can not harm man; on the other hand, it undoubtedly eats birds and their eggs and occasionally chickens. Each farmer will have to weigh the evidence and form his own judgment.

The blacksnake is a good traveler and usually covers a wide territory in its search for food, but sometimes it becomes attached to one place and stays there year after year. Its breeding habits have been studied in detail<sup>\*\*</sup> and its manner of mat-

<sup>\*</sup>Cope, E. D. *Crocodilians, Lizards and Snakes*, 1894, p. 795.

<sup>\*\*</sup>Brinley, C. S. *American Naturalist*, 1903, Vol. 37, No. 436.

ing has been described,<sup>\*</sup> but on account of lack of space these features of its life history can not be discussed in detail here. It is oviparous and lays about a dozen eggs in soft earth at about the middle of Summer. These eggs are large and pure white, about two inches long and three-quarters of an inch in diameter, and have a tough, rough shell. They hatch in about two months. The young snakes are not black and would not be recognized as blacksnakes; they are gray with brown markings on the back



FIG. 10  
BLACKSNAKE COILED ABOUT A RABBIT  
A Good Shot Taken in Adair County

and black spots on the sides and do not become black until after they are a year old. They grow rapidly and sometimes attain a length of over six feet.

A few wide-spread ideas about the blacksnake should be noted. This is the snake which is said to be a deadly enemy of the rattlesnake, searching it out and killing it on all occasions, and curing itself if bitten, by eating certain plants; we can not verify this from our experience. This is the snake also which above all others is supposed to have the power of charming its prey; this has been discussed in a previous section of this report. It is commonly believed that the blacksnake is a sort of tyrant among snakes, never losing an opportunity of attacking any

<sup>\*</sup>Brous, H. *American Naturalist*, 1882, p. 265.

other reptile which it meets; this is true to the extent that the blacksnake, being one of our largest snakes, and often feeding on other snakes, not infrequently captures and swallows other smaller reptiles. It is believed, also that the blacksnake has a terrible temper and is always anxious to pick a fight with man or beast; we have never known the snake to fight except when there was no other means of escape. It is said to chase human beings, and many tales have been told the writer of its "running" children and even adults; we are quite sure that this is not correct, for we have always found it extremely eager to make a "quick get-away." Blacksnakes are believed to lie in wait upon the limbs of trees and pounce upon human beings walking beneath; in an account recently printed in the Louisville Courier-Journal (July, 1920) the following description occurs: "He turned and saw a snake on the limb of a tree directly over his companions. Coiled in several circles, it was ready to send its huge body flying. Its fangs shot out of its mouth." Of course blacksnakes are often found in trees, since they are good climbers and rob birds' nests, but if the snake in question was "ready to send its huge body flying" the flight would have been away from the intruders. The statement that "the fangs shot out of its mouth" is amusing. A similar story of last year in the Harrodsburg Herald describes a snake which "licked its fangs in the face" of a man; when we remember what fangs are, we know of course that the harmless tongue of the snake is meant. Such newspaper items do much to keep alive many of the foolish notions which have been mentioned. In newspaper accounts, also, the snake—be it good, bad or indifferent—is usually reported as having been killed. A blacksnake record which we have clipped from the Danville Advocate (January 20, 1922) notes that a certain individual while walking over a farm "which lies near the Mackville pike about two and one-half miles from here, discovered a black racer, which he promptly killed, and after being stretched out measured five feet." The phrase "which he promptly killed" is characteristic. In most press stories the snake "put up a terrible fight but was finally killed" or, "after the snake was killed, it was found, etc, etc." We should like to read in a newspaper item that "after the snake was released" such and such things were discovered.

Blacksnakes over five feet long are not unusual in this State. The record from Oakland as given above was of a five-foot snake; that from Mayo records two specimens, one six feet and the other six and one-half feet long; the Madisonville record is of a five-foot specimen. The account of the five-foot specimen quoted from the Danville Advocate is interesting not only as regards the size of the snake, but also because of its appearance in midwinter. It is not unusual, however, for these snakes to remain active throughout the season in open winters. Our field records for the blacksnake show dates of December 19, 1920, March 18, 1921, and January 22, 1922.

Personally, we have considerable admiration for this good-looking, active, graceful serpent and are inclined to overlook its faults and praise its virtues.

#### 10. *Elaphe vulpina* B. & G.—Fox snake.

*Description:* Length 3—5 ft.; scales in 25 rows; median dorsal scales faintly ridged; vertical plate broader than long; body stout, ground color light brown with a series of subquadrate rich brown blotches on the sides; abdomen yellow with irregular dark spots; scutes about 200; anal plate bifid; tail abruptly tapering.

*Distribution:* Fairly common throughout the State.

*Records:* Lexington (V. K. Dodge); Dix River; Tyrone; Corbin (W. D. F.).

#### *Remarks:*

This snake gets its popular name from the fact that when it is irritated it gives off from glands at the base of the tail a strong smelling secretion which is supposed to resemble the odor of a fox.

The fox snake is a heavy-bodied reptile with a short tail which tapers abruptly to a sharp point. It sometimes grows to a large size. We have seen a specimen which was over six feet in length.

These snakes are very valuable, for they live almost entirely on rats and mice. No better guardian of a corn-crib, barn or storehouse can be obtained. They can follow a rat into holes and into places where a dog or cat can not go, searching out the nests and devouring the whole litter of rodents. They are

accused of eating birds but personally we have never known of an instance of this and we have never found feathers or egg-shells in their stomachs.

They live on the ground. We have never seen them in trees or bushes, but on one occasion found a specimen on top of a stone fence. They are powerful snakes and will fight bravely when first caught, but, like the blacksnake, they soon become reconciled to captivity and make good pets. A specimen caught on the banks of the Dix River in September, 1921 was very savage when first captured, lacerating the writer's hands considerably by biting, but after being handled for a few hours became quite docile. This individual has been kept in the laboratory ever since. It has accompanied the writer on many lecture trips, being carried inside his shirt, and is now so meek and contented that it can not be induced to bite even under excessive provocation, so that it is practically useless as a demonstration specimen.

Fox snakes lay eggs to the number of 18—20 in rotten stump and hollow logs and in sawdust piles.

#### 11. *Elaphe obsoleta obsoleta* Say.—Pilot snake.

*Description:* Length 4—6 ft.; scales in 27 rows; median dorsal scales very faintly keeled, the others smooth; vertical plate longer than broad; body stout; head broad; nose flat; body uniform shining black; upper surface of head black; superior labials white with black edges; abdomen gray, lighter toward the head and darker toward the tail; scutes about 250; anal plate bifid.

*Distribution:* Common, especially in the eastern mountains.

*Records:* Mountains (H. Garman); Boonesborough (G. H. Vansell); Lexington (G. H. Vansell); Edmonson Co.; Bell Co. (W. D. F.).

#### *Remarks:*

I believe that we have two or three varieties of this snake in Kentucky. Certainly the form *spiloides* is represented but we doubt if this should be considered a distinct species as recognized by Cope\* for we find gradations between this and the typical form.

\*Cope, E. D. U. S. Nat. Mus. Report, 1890. p. 341

The pilot snake resembles the blacksnake in appearance and habits. It may be distinguished, in addition to the difference in the more technical characters, by its lighter colored abdomen and by the fact that the edges of the scales, where they are hidden under the overlapping rows, are usually edged with white.

It gets its common name from the popular belief that it "pilots" the rattlesnake, traveling ahead of the poisonous species to warn it of danger. Why the rattlesnake more than the pilot snake needs to be warned is not explained by the tradition.

The pilot snake is a rather shy reptile and avoids larger animals. It frequents secluded spots and is partial to rocky places where there are plenty of holes and crevices in which to hide. It enjoys the sun and can be found stretched out at full length on warm rocks. It is a good climber and is frequently found in trees and bushes. The specimen recorded above from Boonesborough was found by Professor Vansell inside the cabin in which he was camping. On the whole its habits and food seem to be about the same as the blacksnake. It is oviparous but we have not seen its eggs. They are described as ovate, about two inches long and one inch in diameter.

Its attempts to escape when first captured, while rather violent at first, do not last long as it soon gets over its fear and becomes quite docile.

It is a harmless and beneficial snake.

#### 12. *Pituophis melanoleucus* Daud.—Pine snake; bull snake.

*Description:* Length 4—6 ft.; dorsal scales keeled; scales in 29 rows; head small; two rows of prefrontal plates; loreal plate single; body stout, whitish, with a series of large brown or black blotches on the back and sides; abdomen white; scutes 220-230; scutes edged with a series of black dots; anal plate entire; tail terminating in a hard spine.

*Distribution:* Apparently not common.

*Records:* Corbin; Twila (W. D. F.).

#### *Remarks:*

This snake belongs to an interesting group often called



the "Bull Snakes" which have the epiglottis developed in such a way as to make a loud noise when the snake forcibly exhales its breath in anger. When the pine snake is excited it rears and strikes, darting its head forward with mouth open, and violently expels the air from its lungs against this cartilaginous flap above its windpipe in a loud hissing sound which may be heard some distance. These hostile exhibitions are quite impressive enough to terrify its enemies but they are pure bluff for the snake is not poisonous. It has, however, a most violent temper, is very powerful and is a hard fighter. When it is in a rage, it lifts up the front part of the body, hisses frightfully, strikes viciously and often at the same time vibrates its tail rapidly, giving a good imitation of a rattlesnake. When it is thus performing, it requires a considerable amount of nerve on the part of the student to attempt to capture it.

Pine snakes are said to occasionally attain a length of eight feet which makes them among the largest snakes in the United States. They are true constrictors, squeezing to death the rabbits, squirrels, rats and mice on which they feed. They also feed upon birds and their eggs and have been known to eat a half-dozen hen eggs at one time.

They are oviparous, laying from fifteen to twenty large, dirty-white, leathery eggs.

Morose and sullen in disposition, savage in habits, violent in temper, resentful in captivity, the pine snake is a hard customer to handle in the field and a disappointing specimen in the zoological garden.

It is probable that the peculiar spoke like end of the tail of the pine snake has been responsible for some of the superstitions regarding snakes striking or "stinging" with their tails. The tail is, of course, harmless.

### 13. *Opheodrys aestivus* Linn.—Green snake.

*Description:* Length 30–35 in.; scales keeled and in 17 rows; head conical; neck very small; uniformly bright clear green above, without markings; abdomen yellowish; anal plate bifid; scutes 150–160; tail long, more than one-third total length.

*Distribution:* Common in most parts of the State

*Records:* Throughout the State (H. Garman); Lexington; Versailles; Lawrenceburg (W. D. F.).

#### *Remarks:*

A beautiful little snake, easily recognized by its bright, grass-green color without markings, but very difficult to discover among the leaves because of its protective resemblance.

It is often found in bushes where it feeds upon insects and larvae. It has the curious habit of keeping its pale, flesh-colored tongue stuck stiffly out of its mouth without moving it or spreading apart the forks.

It is oviparous but we have never seen its eggs.

It is entirely harmless and can not be induced to bite, but we have known ignorant persons to object to it because it had a "poison color". In this connection it has been said of a closely related species:

"A more innocent and more dainty reptile cannot be imagined than one of these creatures, and the spectacle of a tiny green serpent beaten to death on the roadside should provoke a pity for the human individual who so "bravely" engaged in combat and succeeded in destroying with the aid of a substantial club, about twelve or fourteen inches of diminutive body that would have real difficulty in battling with a fair-sized grasshopper".\*

The green snake is a beautiful, timid little reptile, absolutely harmless and extremely beneficial.

### 14. *Diadophis punctatus* Linn.—"Ring-necked snake."

*Description:* Length 12–15 in.; scales in fifteen rows; body slender; head flat; color dark gray above and reddish or yellowish below; a bright yellow ring around the neck just behind the head; sometimes black spots on abdomen; scutes 140–150

*Distribution:* Central Kentucky and probably eastern mountains.

*Records:* Frankfort (C. W. McGinnis) May, 1924.

#### *Remarks:*

This little snake which is very common in the eastern

\*Ditmars, R. L. The Reptile Book, p. 225.

states is apparently rare in Kentucky as our only record is the one above. This specimen is in the collection of the University of Kentucky

The ring-necked snake is a small secretive species generally found under stones or beneath the bark of fallen trees. It is omnivorous but seems to prefer earthworms and ants.

It is oviparous, the three eggs being laid in midsummer and hatching late in the fall. The species is of course entirely harmless.

15. *Lampropeltis triangulum triangulum* Lac.—Milk snake, House snake, "Cow-sucker," "Checkered snake," etc.

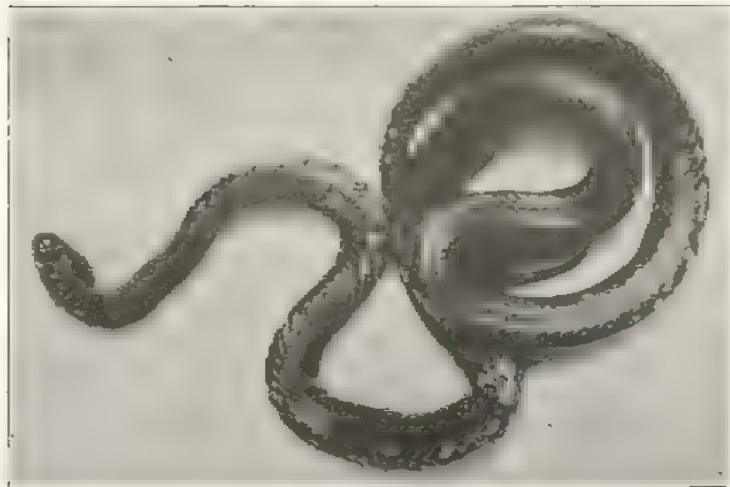


Fig. 51  
THE MILK SNAKE  
Which does not milk cows as is often supposed

**Description:** Length 30—40 in.; scales perfectly smooth and in 21 rows; loreal plate present; body gray with a series of saddle shaped brown markings on the back, these markings usually bordered with black; a series of smaller blotches on the sides alternating with those on the back; abdomen white with large square black spots; scutes 180—200; anal plate entire.

**Distribution:** Very common throughout the State.

**Records:** All parts of State (H. Garman); Fayette Co. (J. B. Taylor); Lexington; Blue Grass Park; Nicholasville; Hart Co.; Knox Co.; Bourbon Co. (W. D. F.).

**Remarks:**

A very abundant, easily recognized and well-known snake which has been given a number of popular names. The names "milk-snake" and "cow-sucker" are applied to it because of the wide-spread belief that it sucks the milk from the udders of cows. We have been told time and time again of cows returning from the pasture with their udders almost dry and of milk-snakes having been seen in the same pasture; also of cows in the barn giving only a small amount of milk and of these snakes having been noticed in the same barn. The tradition, however, is without support. In the first place, snakes have no fleshy lips and therefore cannot suck; it should be remembered that the sucking animals, that is, those which in their early life secure nourishment from the mammary glands of the mother, are provided with fleshy lips for that purpose; but snakes, which do not take liquid food in that manner, have hard, horny jaws which are not fitted for this process. In the second place, snakes drink very little liquid of any kind—a teaspoonful a day would be a large amount—and consequently would not affect the yield of a cow to any noticeable extent, even if they did "suck" them. Milk snakes are commonly found in pastures, to be sure, where they feed on field-mice, moles, lizards, and the young of other snakes. They are also often found in barns, stables and dairies where they search for rats and mice. In addition to this, they enjoy warmth, as do all snakes, and have actually been seen in cold weather nestled close to the warm udders of the cows which were lying in the stalls. The circumstantial evidence has therefore been against them and they have thus been given a bad name which is, however, not deserved. It is probably true that cows come in from the pasture or are found in the barn with only a small amount of milk in their udders; why this happens must be explained by the dairyman as it is out of our field. It is equally true that milk-snakes are often found near cows. But the conclusions usually drawn from these two facts are not correct.

The name "checkered" snake is given to this species because

of the large square black blotches on the white abdomen which suggest a checker-board.

The milk snake is a slender reptile, usually about a yard long when full grown, active and alert. It is entirely harmless and is decidedly beneficial. Mice seem to be its favorite food. It is oviparous, laying in June about a dozen eggs which hatch in September. The young specimens look much like the adults but are brighter in color.

The milk snake lives well in captivity but eats very little when caged. We have had specimens in the laboratory almost continually for years since they are among the commonest of the snakes to be collected, are easy to handle, and live for a long time.

**16. *Lampropeltis getulus* Linn.—King snake; Chain snake; Thunder snake.**

*Description:* Length 4—6 ft.; scales not keeled and in 21 rows; head small; loreal plate present; neck distinct; body stout, ground color black with narrow white cross-bands which fork on the sides and connect with each other; abdomen yellow with large irregular black splotches; scutes 200—250.

*Distribution:* Not common but probably widely distributed.

*Records:* Midland (H. Garman); Daviess Co.; Whitley Co.; Bell Co. (W. D. F.).

*Remarks:*

This snake gets the name "king snake" because it preys upon other snakes and is the enemy of the rattlesnake and copperhead which it destroys without appearing to suffer from their bites. The curious chain-like markings on the sides have suggested the name of "chain snake", while the forked endings of the vivid white or yellow lines, like the conventional representation of a lightning-flash is probably responsible for the associated thought resulting in "thunder snake".

The king snake is a cannibal and feeds largely on other serpents. It has been proven by experiment that it is immune to the venom of poisonous species; injections of the fluid from the fangs of rattlesnakes, copperheads, moosehairs, and even the

terrible West Indian fer-de-lance, do not affect it. It eats also rats, mice, moles, lizards and birds.

It is a mild-mannered reptile, rather sluggish in habits, and after a short life in captivity may be handled without showing the least bad temper. It is entirely harmless.

It is generally found in wooded areas and seems to prefer secluded spots. We have never found it in the open fields or roadsides. It lays from one to two dozen eggs in the early summer. These hatch in about two months, the young snakes resembling the parents.

We consider this the most beautiful snake in Kentucky. The smooth, highly-polished scales are iridescent in the sunlight and the colors are striking and distinct. It is a fine, large, valuable snake.

**17. *Carphophis amoenus* Say.—Worm snake.**

*Description:* Length 8—10 in.; scales keeled and in 13 rows; head not distinct from neck; two prefrontals; four frontals; one nasal; no preocular; eyes very small; snout pointed; body stout, chestnut brown above, salmon-pink on lower sides and abdomen; no markings; anal bifid; scutes 110—125.

*Distribution:* Fairly common throughout the State.

*Records:* Throughout Kentucky (H. Garman); Clifton (W. D. F.); Lawrence Co. (V. Skaggs); Harlan Co. (W. D. F.).

*Remarks:*

A tiny little ground snake which is probably far more abundant than records would indicate. It is a burrowing reptile, very inconspicuous in color, small in size, and secretive in habits, so that it is very seldom noticed. It lives under stones and bark and in holes in the earth. It may sometimes be found moving among the forest litter and is occasionally ploughed up in the fields.

It lays eggs in late summer. The young snakes are so small that they are easily mistaken for earthworms. The adult specimens live on earthworms and the larvae of insects; the young are said to feed upon the larvae of ants.

A perfectly harmless and inoffensive little snake which can



not bite and which probably does some good in destroying insects.

**18. *Carphophis amoena helenae* Ken.—Worm snake.**

**Description:** Same as preceding except that it has only one pair of prefrontals instead of two.

**Distribution:** Probably common everywhere in the State.

**Records:** Abundant throughout the State (H. Garman); Kentucky River; (H. Garman); Tyrone (H. Garman); Clifton; Valley View; Lexington (W. D. F.).

**Remarks:**

This is probably only a variety of the preceding species, differing in the number of frontal plates. Professor Garman records the fact that he has found an intermediate form with three plates.\* The same authority also states that *helenae* is much the more common form in Kentucky, twenty of this variety being found to one of the type form. We have taken both varieties on the Anderson County side of the Kentucky River between the Locks and Clifton.

**18. *Heterodon contortrix* Linn.—Hog-nosed snake; "Blow-snake"; "Spreadhead"; Spreading Adder; Puff Adder; "Blowing Viper"; "Spreading Viper"; etc.**

**Description:** Length 20—30 in.; scales keeled and in 23-25 rows; considerable variation in color, but the commonest pattern is a ground color of yellow, brown or reddish, with large patches of dark brown from the neck to the tail, those on the tail being semicircular; abdomen greenish-yellow with black spots on edges of scutes; head flat; nose distinctly turned up; body thick and heavy in proportion to its length; anal plate bifid; scutes 120—150.

**Distribution:** Very abundant in all parts of the State.

**Records:** (By Counties). Ballard (E. W. Whalen); Bath (C. F. Martin); Boone (K. Tanner); Bracken (P. J. Arnold); Breathitt (G. W. Thompson); Bullitt (J. H. Sanders); Calloway (J. B. Gardner); Campbell (A. B. Regenstein, H. F. Link); Carlisle (B. A. Hensley); Casey

(C. Lucas); Clay (L. A. Clark); Clinton (W. M. Watkins); Crittenden (J. R. Spencer); Cumberland (C. S. Payne); Daviess (H. S. Berry); Edmonson (W. G. Bulfinger); Elliott (H. H. Mayse); Fayette (W. D. F.); Fleming (H. F. McKenney); Fulton (J. Maddox); Gallatin (F. Irwin); Graves (B. H. Mitchell); Grayson (J. S. Hughes); Green (J. A. Howard); Harlan (R. T. Harrison); Hart (J. S. Pullen); Henderson (D. W. Martin); Henry (C. Fishback); Hickman (L. Jackson); Hopkins (M. M. Gordon); Jackson (W. R. Reynolds);



FIG. 52

THE HOG NOSED SNAKE OR "SPREAD-HEAD"  
A perfectly harmless snake but an excellent bluffer

Kenton (C. A. Wicklund; Knott (A. Campbell); Knox (E. Mayhew); LaRue (J. N. Jones); Laurel (F. B. Wilson); Lawrence (G. C. Baker); Leslie (C. Morgan); Lewis (R. O. Bate); Lincoln (C. B. Elston); Livingston (C. Hollinsworth); Logan (W. R. Whitlow); Marion (H. J. Childress); McCracken (J. R. Bird); McLean (R. H. Ford); Muhlenberg (F. O. Townes); Nelson (C. L. Hill); Ohio (T. Hughes); Oldham (G. B. Nance); Owen (D. P. Morris); Owsley (P. M. Frye); Pike (W. M. Wesley); Pulaski (W. C. Wilson); Taylor (J. L. Miller); Union (A. M. Allen); Washington (R. M. Heath); Webster (L. E. Cutler); Wolfe (W. B. Sebastian.)

\*Garman, H. Vertebrate animals of Kentucky. 1894. p. 36.

(*Special Records*): Mt. Olivet (J. Davis); Madisonville (F. Bates); Dover (G. Fulton); Piqua (C. Chamberlin).

*Remarks:*

Probably no harmless snake in Kentucky is so commonly believed to be dangerous or is so universally misunderstood as this entirely harmless hog-nosed snake. The writer has even found persons who believed that its breath is poisonous. The belief that this reptile is venomous is not strange when its threatening actions are considered, but these actions are at best only a rather crude type of protective mimicry. This snake is generally found in dry sandy regions and in ploughed fields where it feeds largely on toads. It is oviparous, laying about twenty eggs early in August. It is slow and sluggish in movements and is easily captured. When disturbed it assumes a most formidable attitude, flattening its head, swelling out its neck and upper half of its body, and hissing and striking most savagely. It is, however, perfectly harmless and has the peculiar habit of "playing dead" when frightened. Its habits have been excellently described by Ditmars as follows:

"When the Hog-nosed Snake first discovers danger, its first impulse is to make for safety, but owing to its custom of traversing sandy areas or ploughed fields, shelter is a long way off and out of the question. Realizing that it cannot escape the object of its fright, the snake's first move is to inspire fear on the part of the enemy that the latter will leave it with the thought that venom is part of its make-up. Taking a long breath, that it may expand its stubby body as much as possible, the snake follows this move by flattening the head and neck to such an extent that the neck becomes fully three times the normal width, causing the colours to stand out vividly on the distended skin while the head assumes the most formidable outlines. It may be said in justice to the reptile's antics that a Hog-nosed Snake, playing this game of bluff is the personification of villainy, and an angry copperhead beside it, in spite of that reptile being genuine among the dangerous, would appear quite angelic to a popular-minded observer.

While flattened and in every way over-doing the actions of the most deadly snakes, the reptile ejects the deep breath it has taken in a long, sharp, hissing sound. This manoeuvre completes a picture of ferocity seldom to be seen among serpents. The writer has watched the majority of the world's most deadly snakes assume their various fighting

attitudes, but he will give this harmless and really *gentle* creature the credit for appearing even more hostile than the African vipers which are among the most fear-inspiring in aspect of any of the really poisonous serpents.

During these very hostile symptoms the Hog-nosed Snake continues to hiss with energy and strike repeatedly at the object of its annoyance. To one understanding snakes, the actions are amusing, for *if the hand be placed within reach of the snake's jaws it is never bitten*, and it must be explained that during these feints, the snake cannot be induced to bite. Its object is simply to frighten away the enemy in order to render possible an escape.

If these fighting symptoms do not produce the desired effect of freeing it from molestation, the Hog-nosed Snake tries different tactics. Suddenly opening its mouth, it appears to be injured and to lose strength. Then a convulsion seemingly seizes the snake, as it contorts its body into irregular undulations ending in a spasmodic wriggling of the tail when the reptile turns on its back and lies limp and, to all appearances, dead.

So cleverly and patiently does the snake feign death that it may be carried about by the tail for half an hour or more, hung over a rail fence where it dangles and sways to a passing breeze, or tied in a knot and thrown in the road, and to all of this treatment there is no sign of life *except from one condition*. In spite of this remarkable shamming the snake may be led to betray itself if placed upon the ground on its crawling surface. Then like a flash it turns upon its back again and once more becomes limp and apparently lifeless. It appears, according to this creature's reasoning, that a snake to look thoroughly dead should be lying upon its back. This idea is persistent, and the experiment may be repeated a dozen times or more.

Should the observer retreat some distance away, while the reptile lies thus, or he seek nearby concealment, the craftiness of the animal may be realized. Seeing nothing further to alarm, the serpent raises its head slightly and surveys its surroundings, and if there is no further sign of the enemy it quickly rolls over upon its abdomen and glides away as fast as its thick body will carry it. But at such a moment a move on the observer's part would send the reptile back again with ludicrous precipitation."\*

The common idea that the snake is poisonous, and the atten-

\*Ditmars, R. L. Reptile Book pp. 380-381.

tion attracted by the well known habit of "blowing" is to be noted in the following, clipped from the Dover News (July, 1919):

"While George Fulton was cleaning out a field of corn he heard a strange noise in the bushes at the edge of the field resembling that made by a goose, and upon investigation found that it was being made by a poisonous snake, known as a blowing viper. Mr. Fulton succeeded in killing it by the use of his hoe. Mr. Fulton also discovered a nest of snake eggs which contained nineteen."

The Hog-nosed Snake is an admirable bluffer and has fooled many an unsuspecting person. But it is really harmless, is much of a coward, and is not at all to be feared.

**20. *Micrurus fulvius* Linn.—Coral snake; bead snake; harlequin snake.**

*Description:* Length 20—30 in.; scales not keeled; head squarish; two nasal plates; no loreal; two permanently erect, perforated poison fangs in the upper jaw; snout short; body slender; color pattern consisting of alternating rings of bright red, brilliant yellow and blue-black, the yellow rings narrower than the others; the red rings usually absent on the tail; anal plate entire; scutes behind the anus in two rows.

*Distribution:* Probably the eastern and southeastern parts of the State.

*Records:* East Point, Johnson County, Sept., 1923 (G. L. Ramey).

*Remarks:*

The only actual specimen of this snake which we have seen from Kentucky is the one recorded above, but we have received numerous other accounts of a snake occasionally seen which we can refer to no other species. The peculiar coloration of the coral snake with its series of alternating scarlet, yellow and black rings is so distinctive that it would seem hard to mistake it, and the descriptions given by persons who claim to have seen it are very accurate, so that we believe that it may be found here more commonly than the single record would indicate.

The popular names for this snake are of course suggested

by its peculiar appearance. The alternating rings consist of red and black bands from eight to ten scales wide, separated by narrow yellow rings which cover only about two scales. On the tail the red rings are missing. These bright colors are supposed to represent "warning coloration".

The coral snake is venomous but there has been considerable discussion as to its power to injure man. It certainly has poison fangs but these fangs are small and can not be folded back against the roof of the mouth as in the case of the pit-vipers. It is claimed by some authorities that the snake can not open its mouth wide enough to use its fangs except on very small animals. Jordan describes it as "apparently harmless";\* Cope states that it is "innocuous to man";\*\* and Newman sums up his discussion of the genus with the sentence "they may be set aside as harmless so far as man is concerned".† On the other hand Dr. Loannberg believe that they are very dangerous‡ and Ditmars insists that it is very foolish to consider these snakes as harmless, calling attention to the fact that they are closely related to some very venomous reptiles, that they are extremely treacherous, and that they differ in habits from the crotaline snakes.¶

We have never seen this snake in the field and know nothing of its habits.

**21. *Agkistrodon piscivorus* Lac. Water moccasin; "cotton-mouth moccasin"; black moccasin.**

*Description:* Length 3—5 ft.; upper jaw in front provided with long, erectile perforated poison-fangs, enclosed in a sheath when not in use; tail short and sharp, without rattle; plates of head arranged in a circle around a central plate; head large, triangular; a distinct pit between eye and nostril on each side; neck distinct; scales strongly keeled and in 21—25 rows; body heavy and stout; color brown with indistinct wide dark bands; abdomen sordid yellow with brown blotches; anal plate entire; scutes immediately behind the anus in one row.

\*Jordan, D. S. Manual of Vertebrates. 1899, p. 193

\*\*Cope, E. D. Checklist No. Amer. Batr. and Reptiles. 1875, p. 34.

†Newman, H. H. Vertebrate Zoology. 1920, p. 2.

‡Loannberg, E. Proc. U. S. Nat. Mus. 1894, Vol. 17, p. 334.

¶Ditmars, R. L. The Reptile Book, 1907, pp. 298-309.



*Distribution:* Fairly common in Purchase Region.

*Records:* Fulton Co.; Graves Co.; Galloway Co.; Reelfoot Lake.

*Remarks:*

An extremely dangerous snake. Sluggish, heavy-bodied, sullen, morose, with long powerful needle-pointed fangs and large poison glands, the water moccasin is a wicked and venomous reptile. Our experience has led us to believe that this snake is more to be feared than either rattlesnake or the copper-head because it gives no warning of its presence as the rattler often does, will not slip away and hide as the copperhead usually does, but will lie quietly and lazily hidden in the bushes until it is actually touched, when it strikes viciously and without hesitation.

This snake is often spoken of as the "cotton-mouth" moccasin because of the fact that the inside of its mouth is snow-white and the color is conspicuous when the snake opens its mouth widely as is its habit when disturbed.

Moccasins live in swamps, backwaters and bayous. They are typical water-inhabiting forms and swim well. They are usually to be found in bushes and underbrush at the water's edge or basking on the top of partially exposed stumps and logs in the water.

They are practically omnivorous in diet, eating not only aquatic animals but also birds and mammals. They are viviparous, producing from six to ten young at a time. When first born the young are brightly colored with rich brown markings on a paler background, but these colors fade with age so that adults are sometimes entirely black.

It is very important that this exceedingly venomous reptile should not be confused with the common harmless water snake which has previously been described.

**22. *Agkistrodon mokasen* Beauv.—Copperhead; Highland moccasin.**

*Description:* Length 2-3 ft.; erectile poison fangs on upper jaw; tail without rattle; head heart-shaped and usually copper-colored; plates of head large, arranged in a rosette; pupil of eye vertical; a distinct pit between eye and nostril; neck very distinct; scales keeled and in

23 rows; body slender; color yellowish-brown with a series of V shaped bands on each side which connect above in a narrow band and are wider below; abdomen white with dark spots; anal plate entire; scutes about 150, those immediately behind the anus being in one row; tail short and pointed.

*Distribution:* Very common, particularly in the Knobs and Mountains.

*Records* (By counties): Ballard (E. A. Whalin); Barren (W. T. Cox); Bath (C. F. Martin); Boone (W. D.

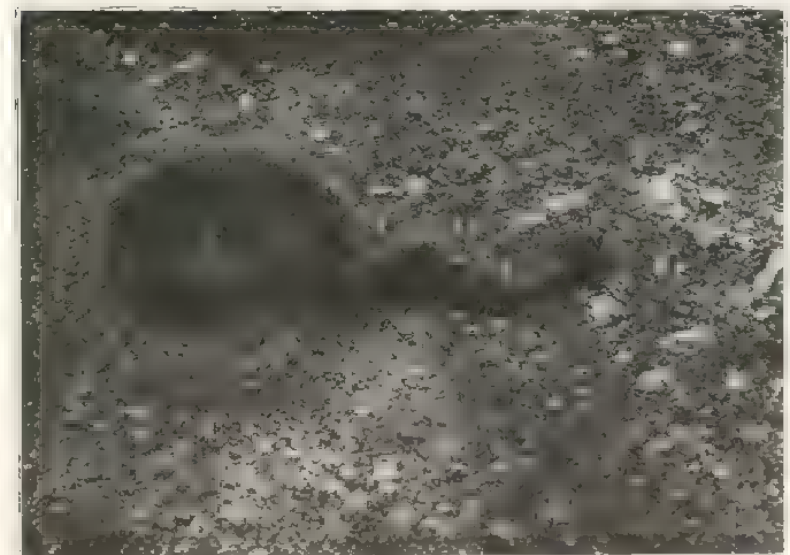


FIG. 53  
THE COPPERHEAD.  
A wicked and dangerous snake.

Sutton); Boyle (L. Peavler); Bracken (P. J. Arnold); Breathitt (G. W. Thompson); Bullitt (J. H. Sanders); Campbell (H. F. Link); Carlisle (B. A. Hensley); Casey (C. Lucas); Clay (L. A. Clark); Clinton (W. M. Watkins); Crittenden (J. R. Spencer); Cumberland (C. S. Payne); Daviess (H. S. Berry); Edmonson (W. G. Bullinger); Elliott (H. H. Mayse); Fleming (H. F. McKenney); Fulton (J. Sangster); Gallatin (L. D. Richards); Graves (B. H. Mitchell); Grayson (J. S.

Hughes); Green (A. Howard); Hart (R. L. Boyd); Hickman (L. Jackson); Hopkins (M. M. Gordon); Jackson (W. R. Reynolds); Jessamine (G. H. Vansell); Kenton (C. A. Wicklund); Knott (A. Campbell); Knox (E. Mayhew); LaRue (J. N. Jones); Laurel (F. B. Wilson); Lawrence (G. C. Baker); Leslie (M. Morgan, C. Morgan); Lewis (R. O. Bate); Lincoln (C. B. Elston); Livingston (J. D. Clapton); Logan (W. R. Whitlow); McCracken (J. R. Bird); McLean (R. H. Ford); Marion (H. J. Childress); Martin (E. Cassady); Morgan (R. B. Rankin); Muhlenberg (F. O. Townes); Nelson (A. L. Hill); Ohio (A. Stearman); Oldham (G. B. Nance); Owen (G. P. Morris); Pike (W. M. Wesley); Pulaski (R. Meece); Taylor (J. L. Miller); Union (A. M. Allen); Webster (L. E. Cutler); Wolfe (W. R. Sebastian); Woodford May 15, 1922 (W. D. F.).

(Special Records): Hueysville (T. Martin bitten); Irvine (O. Kiggins—bitten); Tompkinsville (V. Curtis—bitten); Whitesburg (T. Stallard); Wilmore (J. Gorham); Pleasant Hill (P. J. Howard); Somerset (Mrs. D. Gooch—killed specimen three feet long in her back yard); Fly Branch (R. Silvey).

#### Remarks:

Professor Garman in discussing this snake in 1894 stated that it occurred in the mountainous region of the eastern end of the State. Our records show, however, that it is very widely distributed and quite common in practically all parts of the State outside of the Blue Grass.

The copperhead is a dangerous, venomous snake, active and alert in habits, nervous and irritable in disposition, and very quick tempered. These snakes generally prefer high ground, especially barren and stony hill-sides with southern exposures, which has earned for them the name of "highland" moccasins, but we have often seen them near the water and even swimming from one bank of a stream to the other. They are very shy and will fight only when cornered.

In the field they will eat almost any kind of small animal—frogs, toads, birds, mice, rats, young rabbits, lizards, other snakes—in fact anything they can swallow, but in captivity they are very erratic in their feeding. At the time of the present writing we have in our laboratory a fine large copper-

head which has been in the cage for over four months and has eaten nothing during that time. It is very active and alert but pays no attention to other animals placed in the same cage and is now living in perfect harmony with a large fox snake. We have never been able to induce this specimen to bite anything but have not yet worked up nerve enough to handle it. This morning we placed a live mouse in the cage. Both snakes eyed it for some time and finally the mouse seated itself calmly on



FIG. 54 Photo by W. R. Wilson  
WHERE THE COPPERHEAD BASKS  
Rough hillside with exposed sunlit rocks

the copperhead's head; the copperhead endured the insult for perhaps a minute and then moved disgustedly away. The fox snake then caught the mouse and swallowed it. While writing this description we have been watching the copperhead which was stretched out in the bright sunshine with its body loosely entwined about that of its companion, and decided that we would make one more trial to induce it to strike. We have been prodding it vigorously with a pair of long tongs in an attempt to make it angry but the only response has been a rapid gliding about the cage and a constant flickering of the beautiful long flesh-pink, pale-tipped tongue.

It has been claimed that the poison of the copperhead is

more deadly than that of any of our other venomous snakes. We can not endorse this from our experiments. We have had many opportunities of comparing the result of the bites of the copperhead and the rattlesnake, noting the effect on small animals, and have found that the victims succumb more quickly to the venom of the latter reptile. We have had no opportunities to make this comparison with a mooseasin.

Copperheads are viviparous but generally produce only a small number of young, not over eight or ten at a time. We have one record, however, on this subject, which is extremely interesting. A large female copperhead, about three feet long, was killed by Will Lampert on the Robert Arthur farm on White Creek, Boyd County. Examination discovered *forty-two* young snakes in the body of the mother. So far as I know, this is the largest number ever recorded for this species. The incident is vouched for by Rev. Robert Arthur of Catlettsburg, who is perfectly familiar with copperheads, and was witnessed by Rev. and Mrs. Robert Arthur, Mr. and Mrs. Will Lampert and Mrs. Mary Robinett.

Young copperheads when first born are brightly marked and very active.

### 23. *Crotalus horridus* Linn.—Timber rattlesnake.

*Description:* Length 2—4 ft.; erectile poison fangs on upper jaw surrounded by a fleshy sheath; head large, sub-triangular; plates of head very small, granular, rough and irregularly arranged; deep pit between eye and nostril; neck very distinct; scales keeled and in 23—25 rows; body heavy and stout; colors very variable, usually consisting of broad irregular dark cross-bands on a lighter background; tail short, tapering and provided with rattles; anal plate entire; scutes 160—170, those behind anus being in a single row.

*Distribution:* Widely distributed throughout the State except in the Blue Grass, but the number of individuals is probably not large.

*Records (By Counties):* Ballard (E. A. Whalin); Bath (C. F. Martin); Boyle (W. H. Snapp); Breathitt (G. W. Thompson); Bullitt (J. H. Sanders); Calloway (J. B. Gardner); Carlisle (B. A. Hensley); Carroll (G. C.

Rouff); Casey (C. Lucas); Clay (L. A. Clark); Clinton (W. M. Watkins); Cumberland (C. S. Payne); Edmonson (W. G. Bullinger); Elliott (H. H. Mayse); Fleming (H. F. McKinney); Grayson (R. H. Hughes); Green (J. A. Howard); Hart (J. S. Pullen); Hickman (L. Jackson); Hopkins (M. M. Gordon); Jackson (H. Gepson); Knott (A. Campbell); Knox (E. Mayhew); Laurel (F. B. Wilson); Lawrence (G. C. Baker); Leslie (C. Morgan); Lewis (R. O. Bate); Lincoln (C. B. Elston); Livingston (C. Wanton); Logan (W. R. Whitlow); McCracken (J. R. Bird); McLean (R. H. Ford); Marion (H. J. Childress); Martin (E. Cassady); Morgan (R. B. Rankin); Muhlenberg (F. O. Townes); Nelson (C. L. Hill); Ohio (C. Igleheart); Owsley (P. M. Frye); Pike (W. M. Wesley); Powell (M. Johnson); Pulaski (O. S. Evans); Taylor (J. L. Miller); Union (A. M. Allen); Wolfe (W. R. Sebastian).

(Special Records): Somerset (Mrs. A. W. Server); Rock Creek (R. E. Bell, S. Smith); Princeton (Z. Watt—five foot specimen); Stanford (M. Layton—two specimens, one with 13 rattles and a button); Cheat River (Harrodsburg Herald—report of 76 specimens found under a decayed stump, one measuring six feet in length); Ravenna (A. T. Kinne); Lamasco (W. O. Gray); Boyle County Knobs (W. H. Snapp—specimen with 15 rattles and a button); Yellow Creek (J. W. Fritzpatrick); Morehead (Mrs. C. Smedley); Boyle County Knobs (C. L. Daniels—rattlers biting stock); Vanceburg (R. Silvey); Clarksburg (C. Kinn); Junction City (T. M. Farnsworth); Ribolt (W. Spence).

#### *Remarks:*

The common rattlesnake is too well known to Kentuckians and has been too often described in both scientific and popular literature to require any detailed discussion here.

It is a vicious, venomous snake, often reaching a large size and always to be feared. The poison is powerful and acts quickly, usually causing the death of a small animal in a couple of minutes. It is perfectly capable of causing the death of a human being, although such instances are not common. It feeds on a wide variety of animals but seems to be partial to small mammals. Like the blacksnake, it is supposed to be able to "charm" its prey.

In the field it is active, rapid, and pugnacious, but in



captivity it becomes sluggish, lazy and mild-tempered. We have had specimens in the laboratory which became so accustomed to the constant teasing of inquisitive students that they could not even be induced to rattle.

The timber rattlesnake shows great variation in size and color. We have kept specimens for long periods of time which never got more than two feet long; others grow rapidly and attain a length of over five feet. Sometimes they are rather brilliantly marked, more often they are dingy in color except



FIG. 24. Photo by W. R. Jilson.  
THE HOME OF THE RATTLESNAKE  
Rocky cliffs and low vegetation in an isolated region

immediately after shedding, and occasionally they are entirely black.

Rattlesnakes are usually found in rough, wooded country where places of concealment are abundant. In winter they hibernate in deep holes and crevices in rocks and in caves. They seem to be gregarious in the hibernating season. They do not like cold weather; we have no records of their appearance above ground in this State during the winter months. They are viviparous, giving birth to about a dozen young at a time. When first born the baby rattlers have a single "button" on the end of the tail.

A few wide-spread and erroneous ideas regarding the rattlesnake must here be mentioned. It is often stated that a rattlesnake always coils and rattles before it strikes; this is not true for this species as we have seen them strike savagely sideways without either coiling or rattling, although they generally did both *after they struck*. It is commonly supposed that the age of the snake is indicated in years by the number of rattles; this is not correct, for the snake gets a new rattle every time it sheds its skin and this may happen several times during one year, also it often loses its rattles by getting them caught and broken off in the stubble, weeds, briars and bushes through which it travels, and by having them worn out and broken by rattling. It is often stated that the snake rattles to warn an enemy of its presence; this theory is not generally accepted as such a procedure would often be of decided disadvantage to the snake. The peculiar pit on the side of the head is sometimes thought to be an opening into the poison gland; this is not true, as the pit has nothing to do with the poison apparatus. The function of this pit is not known but it seems to be some kind of a sense organ.

#### 24. *Crotalus adamanteus* Beauv.—Diamond-back rattlesnake.

*Description:* Length 5—8 ft.; scales keeled and in 27—29 rows; head large, triangular; plates of head small and irregular; long erectile poison fangs in sheath on upper jaw; distinct pit on side of head; neck distinct; body heavy and stout; color gray with a series of large diamond-shaped markings of brown on back and sides, each diamond being bordered with yellow and enclosing an area of lighter color; abdomen dull yellow; scutes 170—180, those behind anus being single; tail provided with rattles.

*Distribution:* Probably still exists in eastern mountains but very rare.

*Records:* None.

*Remarks:*

We have no actual records of this reptile from Kentucky in recent years. However, we have seen a skin nailed to a barn door in Bell County which was undoubtedly that of a diamond-

back, and we saw another piece of diamond-back skin which a native of Harlan County was wearing for a hat-band and which was said to have been taken from a snake killed in that county. Moreover, we have reasonably well authenticated accounts of this snake having been killed within the past two years in the mountains, and positive accounts of rattlers over



Fig. 56  
READY FOR BUSINESS  
A rattlesnake coiled in position for striking

six feet long having been measured. We have never seen a timber rattler six feet long, and we are convinced that the diamond-back may still be found in the wilder parts of the mountain regions.

The diamond-back rattlesnake is the largest, the most powerful, the most venomous, and the most to be feared of all the snakes on the American continent. It is sullen and morose in disposition, evil in temper, knows no such thing as fear, never flees from an enemy, and is implacable and always hostile in captivity. Regarding its habits, Ditmars says:\*

"Most deadly of the North American poisonous snakes and ranking in size with the largest of the tropical venomous serpents of both the New and the Old World, this huge Rattlesnake with its brilliant and symmetrical markings, is a beautiful and a terrible creature. Ever bold and alert, ever retaining its wild nature when captive, there is a certain awe-inspiring grandeur about the coil of this formidable brute; the glittering black eyes, the slow waving tongue, and the incessant, rasping note of the rattle. All dignity, the "Diamond-back" seems to flee when surprised. His neighbor, the cane-brake rattler, may retreat in good order, rattling as he goes, but retreating nevertheless; with this pirate of the hummocks, it is different. The mere vibration of a step throws the creature upon guard. Taking a deep inhalation, the snake inflates the rough, scaly body to the tune of a low, rushing sound of air. Shifting the coils to uncover the rattle, this is 'sprung' with the abruptness of an electric bell. There is no hysterical striking, but careful watching, and if the opportunity to effect a blow with the long fangs is presented, the result is generally mortal."

The diamond-back is said always to coil before striking. "To observe a large specimen taken unawares and literally fling itself into fighting position, is to see determination and courage that exists among few reptiles." When undisturbed, its movements are deliberate and slow. It travels in a straight line and does not leave the sinuous trail characteristic of the smaller serpents, but a broad track like that made by a wagon wheel. Like other rattlers it feeds on all kinds of prey but on account of its large size it can swallow much bigger animals than can other snakes. Its life history is about the same as that described for the preceding species.

We may be thankful that this snake is not common in Kentucky.

\*Ditmars, R. L. The Reptile Book 1907. pp. 448-449

CHAPTER V.  
THE BIRDS OF KENTUCKY  
KENTUCKY AS A BIRD REGION

Students of birds throughout the world associate the name of the State of Kentucky with that of Audubon, the most famous and best loved of American ornithologists, and the citizens of this commonwealth may well be proud, not only of the heritage in ornithological research left them by Audubon, but of the wonderful bird life represented within our boundaries.

As a bird region Kentucky enjoys a most fortunate position from a geographical standpoint. Most of the State lies in the Upper Austral zone but the southwestern corner encroaches on the Lower Austral and the eastern counties are well within the Transition zone so that within the State may be found birds representing three distinct faunal areas. Not only this, but Kentucky represents a branching of the great thoroughfare which the birds use in their migrations from the South. As they come up the Mississippi Valley some continue northward into Indiana and Illinois, many on their way to Canada, while others leave the main line of migration at this point and go eastward and northward across the mountains to their summer homes in Pennsylvania, New York, and the New England States. The bird-student in Kentucky is, therefore most fortunate in that he has the advantage of being in a most desirable region for observing a large number of the species of birds of eastern United States.

DECREASE OF OUR NATIVE BIRDS

Unfortunately, however, our native birds, both as to number of species and numbers of individuals, is rapidly decreasing in Kentucky as well as in most other portions of our country. Each succeeding bird census records a smaller and smaller number of our feathered friends and it has been estimated that the State has lost fifty per cent of its birds in the last twenty years. Few realize the significance of these figures. If we have lost half of our birds in the last twenty years, how many





Photo by W. H. Johnson

FIG. 5.  
A BIRD PARADISE  
Chaparral or scrub, a large section of French County

will we have left at the end of the next twenty? Many of the finest birds of Kentucky are practically extinct or have left this part of the country. The wild pigeon has probably gone forever, although many persons now living remember the vast flocks which Audubon so graphically describes; the wild turkey is making its last stand in the more thinly settled parts of the State but is doubtless doomed; the paraquet has deserted us; the quail are becoming less numerous each year; even the friendly and trusting little blue-bird is threatened. The chances are that the next generation of Kentucky boys and girls will know of these birds only through history.

#### VALUE OF OUR BIRDS

This rapid decrease in our bird life deserves more than a mere ethical consideration. It is true that many bird students enjoy their work purely because of the love they possess for the birds. And it would be well worth while to keep our birds with us if it were only for their beauty, their music, and the joy which they bring into our lives. But the scientist values the birds for a far more practical reason and from the cold-blooded, economic standpoint of dollars and cents. Modern conditions, unfortunately, force us to consider animals less from an ethical view-point and more from the way in which they affect our pocket-books, and it is this aspect of bird values which is of extreme importance.

Undoubtedly the greatest enemies of the agriculturist are the insects. The damage done by insect pests in this country is enormous and the figures given by entomologists as to the loss of crops from this source are startling. According to reliable estimates, over one billion dollars is lost annually in the United States on account of the ravages of various crop-destroying and other insects. Some of the most interesting of these items are the following:

Product	Amt. of Loss
Cereals .....	\$200,000,000
Hay .....	53,000,000
Cotton .....	60,000,000
Tobacco .....	5,300,000
Truck crops .....	53,000,000

Product	Amount of Loss
Sugar .....	5,000,000
Fruits .....	27,000,000
Farm woodlands .....	11,000,000
Miscellaneous crops .....	5,800,000
Animal products .....	175,000,000
Forests and forest products ....	100,000,000
Products in storage .....	100,000,000

These figures are entirely beyond the easy comprehension of most of us, who do not count our dollars in millions and billions. Yet they mean that we pay more to feed our bugs, caterpillars, beetles, grasshoppers, scale insects, plant-lice, weevils, cutworms, etc., than we do to keep up our entire school system. They mean that we could pay off our national debt in a comparatively short time with the money we lose on account of insect pests. This situation is becoming more and more critical. Entomologists are constantly in greater demand. Yearly the farmer pays more for sprays, spraying machinery and labor. The problem is serious in Kentucky where agriculture plays so prominent a part in the life of the people.

Our easiest solution of the problem is to encourage the natural enemies of the insects, especially when these enemies of the insects are the best friends of man. Foremost among these friends are the birds. The number of insects eaten by certain birds, and the amount of insects fed to the young during the nesting season is enormous. In a study of the stomach contents of birds it has been found, for example, that the stomach of one cedar-waxwing contained 100 cankerworms; that of one cuckoo contained 250 caterpillars; one chickadee had eaten 454 plant-lice; one nighthawk, 60 grasshoppers; and one flicker, 1,000 chinch bugs. When it is remembered that digestion in birds is very rapid, it will be realized that the number of insects found in the stomach at any one time represents only a small proportion of the daily ration. One scarlet tanager has been seen to eat 630 gypsy-moth caterpillars in 18 minutes—or at the rate of over 2,000 per hour; one Maryland yellow-throat was found to eat 3,500 plant-lice in fifty minutes—or over 5,200 per hour; the breakfast of a house-wren consists of a most surprising collection of caterpillars, bugs, flies, beetles and grasshoppers. It is thus from no mere

sentimental cause that the ornithologist mourns the loss of our birds but from the purely economic standpoint of their value to man.

#### BIRD ENEMIES

If the birds which are so extremely valuable are so rapidly disappearing, what is the cause of their decrease? The abundance of any kind of animal depends largely on the number and abundance of its enemies, and to answer the question concerning the birds we naturally seek for some information regarding their enemies.

Undoubtedly the bird's greatest and worst enemy is man himself. This enmity is in most cases unintentional and sometimes unavoidable but is none the less deadly. One of the ways in which man is causing the destruction of the birds is by the cutting off of our forests. Our forefathers found Kentucky a paradise of wonderful timber; the pioneers in this State entered forests unsurpassed in size and beauty. Slowly these forests have disappeared with very little thought of replanting. The birds are absolutely dependent on the forests for homes, for shelter, for protection and for food, and thus as the forests were cut out, the birds were forced to leave. Moreover, the clean cultivation of the farms, the cleaning up of the roadsides and fence-corners, and the eradication of weeds, all of which are of course necessary to successful agriculture, have nevertheless robbed the birds of their last food supply of native seeds, berries and fruits. Man is responsible also for the wanton shooting of birds, the killing of game birds out of season, rapacious egg-collecting, the destruction of birds for millinery purposes, and the slaughter of certain valuable birds under the mistaken notion that they are harmful.

Next to man, probably the worst enemy of our native song-birds is the domestic cat. This animal, which must be considered as a pest in many ways, has made it almost impossible for the birds to establish themselves in the shade trees in cities and around farms where they naturally tend to come to find a substitute for forest conditions. Professor Forbush has estimated that "a mature cat in good hunting grounds will catch

about fifty birds a year".\* Of course some cats will not get so many, while others will get more, but the average makes for a tremendous loss in our bird population. Cats usually hunt at night and so are not often seen at their nefarious work, but since they can climb trees, and since the fledgling bird just learning to fly is helpless before their attacks, their depredations are most serious. Mr. Victor K. Dodge of Lexington reports that in August, 1921, a party of automobilists riding from Paris to Lexington about midnight, kept a searchlight playing on the fields on one side of the car only, and counted nine cats hunting. Last year from May 1, to September 1, we recorded 53 absolutely proven accounts of songbirds killed by cats in Lexington, eight of which were on the University campus. It seems strange that the house cat should ever have become established as a domestic pet, since from a scientific standpoint they have little excuse for existence. The cat has none of the devotion which characterizes the dog; it is useless from a utilitarian standpoint; it is treacherous and lazy; but above all it is an extremely filthy animal and should never be allowed around human premises. Cats dislike the water, they will not even get their feet wet if they can avoid it, they are particularly averse to taking a bath, with the result that their fur is far from clean even at best; but in addition to this, the mouth of a cat always harbors bacteria, especially about the bases of the teeth. Moreover, the cat is subject to parasitic worms which infest the throat, stomach and intestines, and these worms are often coughed up in sticky masses. The cat has the habit of licking its body and thus wiping this filthy collection of bacteria, worms and decayed food into its fur. Yet it is not uncommon to see children and even grown persons bury their faces lovingly into the fur of their favorite cat! It is little wonder that so many of the diseases of children should be blamed on this animal, especially when these pets are allowed free entrance to sick-rooms where patients have contagious diseases. Medical literature substantiates the claim that cats may be responsible for lockjaw, hydrophobia and septicaemia, since the scratch or bite of a cat is very likely to cause infection. Cats have been

\*Forbush, E. H. The Domestic Cat. Conn. State Dept. Economic Biology, Bulletin No. 2.

much over-rated as destroyers of rats and mice; a blacksnake or a barn-owl around the premises makes a far more sanitary mouser, while the intelligent use of traps and poisons is an entirely satisfactory substitute. Thus it is not merely from the viewpoint of the ornithologist that the cat is regarded as an evil.

The third most dangerous enemy of our native songbirds is perhaps the common English sparrow. This bird, introduced into the United States in 1851, has become a serious pest. It has no song, does not destroy insects to any considerable extent, is noisy, quarrelsome, uncleanly in habits, and seems to have an inborn hatred for our native songsters. It tears up the nests of other birds, breaks the eggs, kills the young, and whenever possible drives off the adults. It has spread into all parts of Kentucky, and since it stays in one locality the year round, is extremely hard to eradicate. A government report states: "The English sparrow is a curse of such virulence that it ought to be attacked and destroyed before it becomes necessary to deplete the public treasury for the purpose".\*

Birds have other natural enemies but the above-mentioned three will serve to partially answer the question as to the reason why we are threatened with the extermination of so many of our most valuable species.

#### PROTECTION OF BIRDS

Methods of protecting birds are naturally suggested by the facts regarding their needs and their enemies. Audubon Societies and Bird Clubs can do much to stimulate interest in the birds, to encourage educational programs, and to work for necessary legislation. Kentucky has been criticized because of its lack of suitable laws for bird conservation, particularly the protection of ducks during spring migration, the exporting of game birds (which only three other states in the Union allow), the sale of game birds, the limit to the number of birds killed at one time by one hunter, and other forms of conservation. The reducing of the number of cats—particularly the

\*The English Sparrow in America, U. S. Dept. of Agriculture, Bulletin No. 1



stray, half-wild, and homeless ones—and the extermination of the English sparrow, can be brought about only by educating the coming generation as to the desirability for these conditions and the eventual passing of city ordinances and State laws tending toward these ends. Meanwhile the feeding of the birds in winter, the building of bird-houses, the erection of bird-baths, drinking-fountains, and feeding-stations, and the provision of bird sanctuaries—which if boy and eat tight, are most desirable institutions—will all aid in the conservation program.



FIG. 58 *Photo by James Speed*  
CARING FOR THE BIRDS

Birdhouses which have stood for over twenty years beside a cobbler's shop at Mays Lick

Certainly the importance of the protection of birds is not fully realized or we should have more interest in this subject. On the average, there are only two birds to the acre in the United States, yet some farmers, by attracting the birds, have increased this to 100. Always they are more than repaid for their trouble, for the birds immediately become the guardians of farm, garden and orchard. If the farmer would appreciate the fact that the army-worm has 43 different bird enemies, the chinch-bug 24, billbugs 67, codling-moth 36, cutworms 98, tent-caterpillars 43, potato-beetle 25, cucumber-beetle 28, white grubs

67, and wire-worms 168, he would not hesitate to make friends with Nature's feathered entomologists. Bird sanctuaries may be established by any farmer or land-owner by setting aside a certain piece of woods and co-operating with schools, bird-clubs, or boy scouts

Bird sanctuaries, however, are not limited to the country. Anywhere where natural conditions are suitable and public sentiment exists, these refuges may be maintained. The prime necessities are of course, first, protection against enemies, second, plenty of nesting sites, third, abundance of food, and fourth, a water supply. City reservoirs make excellent sites for sanctuaries because they are always guarded to prevent contamination, are usually surrounded by vegetation, and furnish abundant water. Cemeteries are always regarded as good places for birds, not only because they are secluded and are free from the disturbance of hunters, playing children and noisy crowds, but also because they are sure to contain trees and shrubs and usually some water.

One of the best ways of attracting birds is the planting of such vegetation as will provide them with food and shelter. The idea of clean cultivation and the removal of all vegetation from roadsides and farm boundaries, with the thought that it prevents insect pests, has been carried to such an extent that many of our highways are now desolate stretches of barren, dusty, road without a tree or bush to gladden the eye. This is of course fatal to bird life. There are plenty of trees and shrubs which may be used as shade trees and hedges which in no way interfere with agriculture and are of great benefit to birds. Owners of large estates, custodians of city parks, and, we regret to admit, even those in charge of school and college grounds, are in many cases persuaded that they should have formal plantings of rare foreign trees and shrubs under the mistaken notion that these exotic plants are more beautiful and desirable than our native flora. We submit that such formal gardens with rows of closely-trimmed shrubbery are no more attractive than natural growths, as they are certainly less beneficial to our birds. Public school play-grounds are often bare, dusty, uninviting places, although nothing is more desirable for the contentment of students than trees and flowers, and

nothing more instructive for Nature Study work than the birds which these attract. City parks, fair grounds, picnic grounds, and the like, are all too often geometrical horrors with formal flower-beds in circles, squares and triangles, hedges and trees trimmed with mathematical exactness, and not a natural growth of foliage to be seen. Yet we have in this State a large variety of native trees, shrubs and vines, many of which are entirely suitable for the purpose of the landscape gardener, and all of which provide berries, seeds, nuts, haws, or other fruits for birds. Some of the most important of these are the red cedar, bayberry, rose, spicebush, raspberry, blackberry, wild cherry, sumac, wild grape, dogwood, elderberry, honeysuckle and Virginia creeper. In addition to these native wild plants there are of course all of the cultivated fruit trees which may be planted for artistic effect, for shade, and for the birds, even if the fruits themselves are not of prime importance. There is no reason why roadsides, railroad right-of-ways, farm lots, parks, grounds, campuses, boulevards and reservoirs should not be beautified by the intelligent planting of such vegetation as will not only attract the birds but will serve as boundary lines, fences, hedges, wind-brakes and soil-retainers.

#### SEASONAL DISTRIBUTION

The following terms are used in the discussion of the migrations and the seasonal distribution of birds.

1. *Permanent Residents*: Species that remain in the same locality throughout the year.
2. *Summer Residents*: Birds that come to the State from farther south in spring, nest here, and return to the south in the fall.
3. *Winter Residents*: Birds that usually spend the summer farther north but come to us in the winter.
4. *Migrants*: Birds that pass through the State only during the spring and fall migrations. This includes a large number in Kentucky.
5. *Visitants*: Irregular and accidental transients which are occasionally found out of their regular range.

#### DESCRIPTIVE TERMS

The technical characters characters used in describing birds are chiefly those which refer to beaks, feet, tail, and feather areas. The beak and feet of a bird are usually adapted to its special mode of life and are often so peculiar that they at once distinguish the group to which the bird belongs. The number of primary feathers of the wing, and the number of tail feathers are valuable technical characters but are used in the laboratory rather than in the field. The same is true of the shape of the mouth, the structure of the toes and the tip of the beak. In

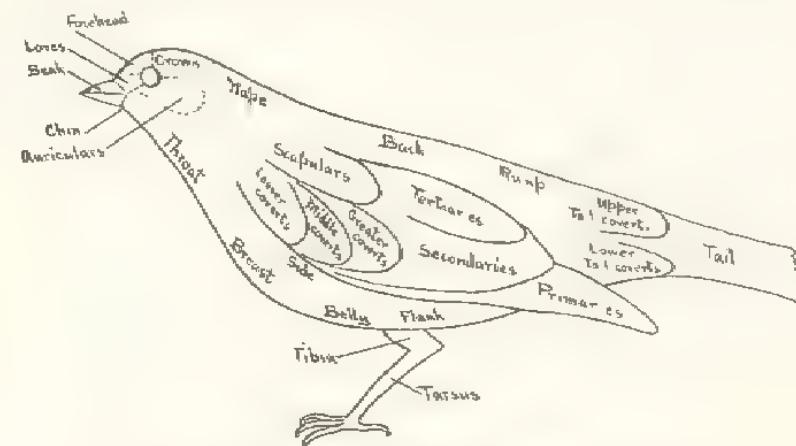


FIG. 55  
OUTLINE OF A BIRD SHOWING FEATHER AREAS

the field the most important characters to be noted are size, coloration, habits, songs and habitat. Of these, the coloration is most usually noted by the amateur ornithologist, and in correctly interpreting this character it is very important that the student is familiar with the feather areas as indicated in the accompanying figure. In the descriptions used in this report these areas are constantly mentioned. In the measurements given, the length in inches is given for body, wing and tail, and refers in all cases to average adult birds. These measurements are indicated by the initials L, W, and T. For those birds which breed in Kentucky, brief mention is made of the type of nest and the number and color of the eggs. We have attempted no detailed descriptions, but have endeavored to give

a few of the more important characters which may aid in identification.

#### SPECIES INCLUDED

In the following descriptions the first number given before each species is the serial number for this list; the second number, in parentheses, is the regular A. O. U. Check List number for the bird.

We have attempted to include in this list every bird which has been reported on reliable authority from Kentucky. In some instances the species have not been seen for many years and this fact is so indicated. Unless stated to the contrary, however, the species have been reported within the last two or three years.

Dates of arrivals and departures, breeding records and visitant records are given whenever such data are available. In the case of very common permanent residents of course no attempt has been made to include all records. The authorities for the records are indicated in parentheses for each species.

#### LIST OF SPECIES

##### ORDER PYGOPODES—DIVING BIRDS

*Characters:* Ducklike birds but with the beak pointed and not flattened; tail very small; legs placed far back; tarsus flattened; feet webbed or lobed.

1. (6) *Podilymbus podiceps* Linn.—Pied-billed Grebe; "Water-witch"; "Hell-diver"; "Diedapper"; Dab-chick.

*Description:* L. 13.5; W. 5; No tail. Feet with lobed webs. Summer; Above, brownish black; below, throat black, breast and sides brown mottled with black, belly white; a black band across the beak. Winter: similar but with throat white and no band on beak. Sexes alike. Nest of matted water-weeds and grasses in shallow water. Eggs 4—6 dirty white.

*Season:* Summer resident.

*Records:* Nelson Co., early spring (C. W. Beckham); Lexington (H. Garman); Anderson Co., June, 1919 (W. D. F.).

#### *Remarks:*

A typical water bird and our best diver. A poor flyer and almost helpless on land where it seems to use its wings as fore feet. Swims well under water and has habit of popping up suddenly showing only the beak. Dives forward with remarkable speed when disturbed but often sinks backward, tail first, when unmolested. Lives chiefly on fish and some aquatic vegetable matter. Has a curious "feather-eating" habit which has never been explained.

2. (7) *Gavia immer* Brunn.—Loon.

*Description:* L. 32; W. 14; Tail present; toes webbed. Summer: above, iridescent black; back and wings barred with white; below, breast and belly white; sides and lower tail coverts spotted with white; white streaks on each side of neck and white patch on throat. Winter: wings and tail margined with grayish, not spotted with white; below, white or grayish. Sexes alike.

*Season:* Rare visitant.

*Records:* Eastern Kentucky (H. Garman); Nelson Co. 1911 (B. J. Blincoe); Lexington, Apr. 1, 1908; Apr. 24, 1909 (M. Didlake).

#### *Remarks:*

Frequents lakes and rivers. An excellent swimmer and diver. Clumsy on land, using wings and beak in locomotion. Has a weird maniacal cry which has given rise to the phrase "crazy as a loon".

3. (9) *Gavia artica* Linn.—Black-throated loon.

*Description:* L. 27; W. 11; Summer: above, back, wings and tail black. Back spotted with white; crown and nape gray; below, a band of white streaks on throat; sides of neck spotted with white; breast and belly white. Winter: similar but no white markings on back.

*Season:* Very rare visitant.

*Records:* Ohio River (Audubon).

#### *Remarks:*

We have no recent records of this bird in the State and are including it entirely on the authority of Audubon.



If it occurs now, it is a very rare wanderer from the far north.

Order LONGIPENNES—Long-winged Swimmers.

**Characters:** Birds generally on the wing near water; beaks strong and heavy; wings very long and pointed, the outer feathers much the longest; toes webbed; colors generally some shade of gray, lighter below.

4. (47) *Larus marinus* Linn.—Great Black-backed Gull.

**Description:** L. 29; W. 18.5. Beak strongly hooked; tail-feathers of equal length; toes webbed. Summer: back and wings slaty black; wings tipped with white; tail sordid white; below, entirely white. Winter: similar but with the head and neck streaked with gray.

**Season:** Rare visitant.

**Record:** Ohio River (Audubon).

**Remarks:** Like the preceding, this species is included on Audubon's authority. Kentucky is far out of its usual range.

5. (51) *Larus argentatus* Pont.—Herring Gull.

**Description:** L. 24; W. 17; beak 2. Feet webbed, flesh colored. Summer: above, deep pearl gray; beak yellow with a red spot; first primary tipped with white, then crossed by a black mark, then by a large white band; below, pure white. Winter: same but with head and neck darker. Sexes alike.

**Season:** Common migrant.

**Records:** Beach Fork River Jan. 21, 1916 (B. J. Blincoe); Bowling Green, Apr. 19, 1918 (G. Wilson); Ballard Co. (G. Wilson); Lexington, Apr. 23, 1905; Feb. 1, 1907 (M. Didlake); Mar. 20, 1922 (A. M. Miller); Fayette Co. Apr. 1, 1923 (W. D. F.)

**Remarks:**

This is the commonest gull seen in Kentucky and is popularly called the "Sea Gull". It appears frequently about the rivers, ponds and reservoirs in all parts of the State.

6. (54) *Larus delawarensis* Ord.—Ring-billed Gull.

**Description:** L. 19; W. 15. Back and wings pearl gray; first primary black with white spot near tip; underparts pure white; beak greenish with a black ring near the tip, and with the tip and cutting edge yellow; feet olive. Sexes alike.

**Season:** Rare visitant.

**Records:** Lexington, Apr. 25, 1921 (W. Sams).

**Remarks:**

This gull is abundant in the Great Lake region and common in Indiana but we have only one record from Kentucky. It much resembles the Herring Gull but is considerably smaller and the beak is distinctly different.

7. (60) *Larus philadelphia* Ord.—Bonaparte's Gull.

**Description:** L. 14; W. 10; beak 1. Feet yellow with red webs; beak black. Summer: above, head sooty; back and wings gray; first primary tipped with black; below, throat sooty; breast and belly white. Winter: similar but with head and throat white. Sexes alike.

**Season:** Visitant.

**Records:** Ohio River (Audubon).

**Remarks:**

A rare transient, generally seen in the winter inland. We have only the Audubon record.

8. (70) *Sterna hirundo* Linn.—Common Tern.

**Description:** L. 15; W. 10; T. 6. Beak straight and pointed; red at base and black at tip; feet red; tail forked. Summer: above, crown black; back and wings gray; below, throat white; breast and belly pearl gray. Winter: similar but beak almost entirely black and underparts all white. Sexes alike.

**Season:** Visitant.

**Records:** Henderson (Audubon); Ballard Co. (G. Wilson); Lexington, Oct., 1920 (W. D. F.).

**Remarks:**

This sea bird occasionally visits Kentucky, generally in the fall, but is rarely seen.

**9. (74) *Sterna antillarum* Less.—Least Tern.**

**Description:** L. 9; W. 7; T. 3.5. Beak yellow with black tip, straight, slender and sharp; feet orange. Summer: above, forehead white; lores and crown black; back, wings and tail gray; below, entirely white. Winter: similar but top of head only spotted with black. Sexes alike

**Season:** Visitant.

**Records:** Ohio River (Audubon); Lexington, Sept., 1919 (W. D. F.).

**Remarks:**

This tern breeds in Indiana and Illinois but has apparently not been seen commonly in Kentucky.

**10. (77) *Hydrochelidon nigra surinamensis* Gmel.—Black Tern.**

**Description:** L. 10; W. 8.5; T. 3.5. Tail deeply forked; beak black; feet black. Summer: above, entire head black; back, wings, and tail dark slate; below, black. Winter: forehead, nape and underparts white. Sexes alike.

**Season:** Visitant.

**Records:** Louisville (Audubon); Ballard Co. (G. Wilson); Lexington, Aug. 9, 1921 (W. Sams); Jefferson Co. (W. D. F.).

**Remarks:**

A not uncommon visitor in Kentucky. Breeds north of the Ohio River from Indiana to Kansas.

**11. (118) *Anhinga anhinga* Linn.—Water Turkey; "Snake Bird".**

**Description:** L. 34; W. 14; T. 11. Male: head, neck and body glossy greenish black; scapulars streaked with white; greater coverts gray; tail tipped with whitish. Female: head, neck and breast buff; chestnut band across lower breast; rest of plumage black.

**Season:** Rare visitant.

**Records:** Wickliffe, Aug. 28, 1917 (G. Wilson).

**Remarks:**

An accidental visitor to Kentucky, Indiana and Illinois. Its home is in Florida.

Order STEGANOPODES—Totipalmate Swimmers.

Characters: Large birds; mostly marine; all four toes webbed.

**12. (120) *Phalacrocorax auritus* Sw.—Double-crested Cormorant.**

**Description:** L. 30; W. 12; T. 6. Summer: above, head, neck, rump and tail glossy black; curly black crests on sides of head; back, scapulars and wing-coverts grayish brown; below, black. Winter: similar but without tufts on head. Tail composed of 12 feathers. Beak hooked.

**Season:** Regular migrant; may breed in the State occasionally.

**Records:** Nelson Co. Sept. 30, 1916 (B. J. Blincoe); Lexington, Oct. 9, 1919 (A. Roark); Ballard Co. (W. A. Anderson).

**Remarks:** Not uncommon. Sometimes locally called "Water Turkeys".

**13. (125) *Pelicanus erythrorhynchos* Gmel.—White Pelican.**

**Description:** L. 60; W. 22. Summer: above, white; wing quills black; below, straw color; beak, sac, lores and feet yellow. Winter: same. Beak hooked and with horny ridge; lores bare; large pouch on under mandible.

**Season:** A rare visitant if it occurs at all.

**Records:** Ohio River (Audubon).

**Remarks:**

An extremely beautiful bird, snow white in color and with a wing expanse of eight or nine feet. The white pelican is one of the largest of American birds. It stays near salt water in the winter but sometimes comes inland in the summer. It flies very high, sometimes soaring entirely out of sight.

## ORDER ANSERES—DUCKS, GEESE AND SWANS.

*Characters:* Water birds with the front toes webbed and the tail well developed.

14. (129) *Mergus americanus* Cass.—American Merganser.

*Description:* L. 25; W. 10.5 for male; female smaller. Male: head and most of neck glossy greenish black; head slightly crested; breast and belly white, tinged with salmon. Female: head and neck reddish; back bluish gray; chin and throat white.



Fig. 80 Photo by W. A. Anderson

## A RESORT OF WATER BIRDS

Swan Pond in Ballard County. One of the best duck regions in the State

*Season:* Probably a winter resident.

*Records:* Nelson Co. (M. Hurst).

*Remarks:*

A wonderful swimmer and diver and extremely difficult to shoot. It is not a good food duck as its flesh is rank, coarse and fishy. Audubon records this duck as breeding in Kentucky in his time.

15. (130) *Mergus serrator* Linn.—Red-breasted Merganser.

*Description:* L. 22; W. 9. Beak toothed. Male: head greenish black with a long pointed crest of sharp feathers; neck and sides cinnamon-brown with black streaks; a white

ring around neck; underparts white. Female: similar but with top and back of head grayish brown.

*Season:* Migrant and rarely a winter resident.

*Records:* Kentucky (R. H. Dean); Lexington, Apr. 13, 1921 (W. Sams).

*Remarks:*

Audubon recorded this duck as breeding in Kentucky but we have no record of its nesting in the State in recent years.

16. (131) *Lophodytes cucullatus* Linn.—Hooded Merganser.

*Description:* L. 18; W. 8. Male: large circular crest, black in front and white behind with black border; head, neck and back black; sides reddish with black streaks; underparts white. Female: smaller; head and neck brown; no white on wing.

*Season:* Migrant and perhaps a rare winter resident.

*Records:* Louisville (Audubon); Nelson Co. (B. J. Blincoe); Fulton Co. (W. D. F.).

*Remarks:*

Generally found in open water and usually in pairs. Not a good food duck.

17. (132) *Anas platyrhynchos* Linn.—Mallard.

*Description:* L. 22. W. 11. Male: head and neck bright velvety green; white collar on neck; breast bright chestnut; wing marked by white, black and violet speculum; back brown; four middle tail-feathers strongly recurved. Female: smaller and with head streaked with reddish.

*Season:* Very common migrant and often a permanent resident.

*Records:* By counties—Ballard, abundant (E. A. Whalin); Bath (C. F. Martin); Bell (R. H. Shipp); Boone (W. F. Pope); Bracken (P. J. Arnold); Breathitt (G. W. Thompson); Butler (J. E. Render and E. Whalin); Campbell (H. F. Link); Carlisle (B. A. Hensley); Carroll (G. C. Rountt); Casey (W. B. Moser); Daviess (J. W. Whitehouse); Edmonson (W. G. Bullinger); Fleming, plentiful (H. F. McKenney); Fulton (O. L. Cunningham); Gallatin (F. Irwin); Graves (B. H. Mitchell); Green (J. A. Howard); Hart, few (J. S. Pullen); Henderson



(W. G. Turpin); Henry (J. Sanford); Hickman (L. Jackson); Knox (E. Mayhew); LaRue (J. N. Jones); Leslie (G. Morgan); Lewis (R. O. Bate); Livingston (Brandstetter Bros.); Logan (W. R. Whitlow); McCracken (J. R. Bird); McLean (R. H. Ford); Marion (H. J. Childress); Marshall (G. O. Basham); Nelson (C. L. Hill); Ohio (S. O. Keown); Oldham (G. B. Nance); Owen (D. P. Morris); Pulaski (W. C. Wilson); Taylor (J. L. Miller); Union (A. M. Allen); Washington (R. M. Heath).

*Special Records:* Nelson Co. Feb., Mar. and Nov. (B. J. Blincoe); Lexington, Apr. 23, 1916 (C. K. Morrell); Mar. 24, 1904 (M. Didlake); Jan. 10, 1920 (W. Sams); Bowling Green, Feb. 26—May 5; Nov. 28—Dec. 24 (G. Wilson); Bourbon Co. Mar. 29, 1923 (V. Dodge).

*Remarks:*

The mallard is believed to be the ancestor of our common domestic duck. It is an excellent game bird since its flesh is delicious and it is one of the wildest of our wild ducks.

Audubon reported it as breeding in the Kentucky lowlands.

**18. (133) *Anas rubripes* Brewst.—Black Duck.**

*Description:* L. 20; W. 11. Male: head and neck dark buff streaked with black; back, wings and underparts black; bright purple patch on wing. Female: similar.

*Season:* Migrant; occasionally a winter resident and rarely a summer resident.

*Records:* Mississippi River—breeding (Audubon); Nelson Co., Nov. 20, 1917 (M. Hurst); Lexington, Mar. 27, 1920 (W. Sams); Nov., 1919 (W. D. F.).

*Remarks:* A fine large duck, excellent for food.

**19. (135) *Chaulelasmus streperus* Linn.—Gadwall.**

*Description:* L. 20; W. 11. Male: head and neck light brown speckled with black; back and sides slate colored with black and white markings; rump and tail black; chestnut spot on wings; underparts grayish-white. Female: dusky with longitudinal stripes on head and neck; no chestnut on wings.

*Season:* Rare migrant.

*Records:* Woodford Co., May, 1906 (Mrs. L. Brodhead).

*Remarks:*

Apparently scarce in Kentucky. Noted for the peculiar courtship flights in which the male pursues the female through the air.

**20. (137) *Mareca americana* Gmel.—Baldpate; Widgeon.**

*Description:* L. 20; W. 11. Male: forehead white; head and neck white speckled with black; occiput and nape greenish; back and sides reddish; white patch on wing; speculum greenish-black; breast and belly white. Female: back grayish brown with small bars of creamy-buff.

*Season:* Common migrant.

*Records:* Kentucky (Audubon); Nelson Co. (M. Hurst); Woodburn, March 18, 1904 (Mrs. L. Brodhead); Ballard Co.; Graves Co., Fulton Co. (W. D. F.).

*Remarks:*

This duck sometimes stays with us all winter when the weather is mild. It is easily recognized by its white head which suggests its commonest name. Its flesh is highly esteemed as food.

**21. (139) *Nettion carolinense* Gmel.—Green-winged Teal.**

*Description:* L. 14; W. 7. Male: sides of head bright green; rest of head and neck red; chin black; back wavy black and white; underparts white; speculum rich green. Female: head brown; throat and sides of neck white and black.

*Season:* Rare migrant.

*Records:* Kentucky (H. Garman); Nelson Co. (M. Hurst).

*Remarks:* Easily recognized by the bright green patch in front of wing. A very noisy bird.

**22. (140) *Querquedula discors* Linn.—Blue-winged Teal.**

*Description:* L. 16; W. 7.5. Male: head and neck black; white curved mark in front of eye; back mottled brown and reddish; breast and belly reddish with black spots; wing

coverts bright blue. Female: similar but head and neck grayish-white.

*Season:* Common migrant.

*Records:* Nelson Co. (C. W. Beckham and M. Hurst); Bowling Green, April 3, 1920 (G. Wilson); Fayette Co.; Campbell Co. (W. D. F.); Bourbon Co. March 29, 1923 (V. Dodge).

*Remarks:* Beckham says: "The last of the ducks to pass northward in the spring".

**23. (142) *Spatula clypeata* Linn.—Shoveller.**

*Description:* L. 20; W. 10. Beak very long and much widened at the end. Male: head and neck green; back blackish-brown; breast white; belly reddish; speculum green; lesser wing-coverts blue; greater coverts gray with white tips; beak black; feet red. Female: head and neck streaked with buff and black.

*Season:* Rare migrant.

*Records:* Bourbon Co. April, 1890 (V. K. Dodge); Woodford Co. March 15, 1904 (Mrs. L. Brodhead).

*Remarks:*

At once recognized by the beak which is twice as broad at the tip as at the base and is strongly ridged. This duck has a harsh rattling cry which is supposed to resemble the syllables "took-took".

**24. (143) *Dafla acuta* Linn.—Pintail; Sprigtail.**

*Description:* L. 28; W. 10. Neck long and slender; tail thin and pointed. Male: head and neck brown; white stripe on sides of neck; occiput black; back gray speckled with black; speculum green; beak bluish; feet blue; underparts white. Female: tail shorter and not so narrow; head and neck streaked with dark brown.

*Season:* Spring migrant.

*Records:* Nelson Co. (M. Hurst); Lexington February, 1919 (W. D. F.); Ballard Co. numerous (W. A. Anderson).

*Remarks:*

A spring duck in this region. Found on ponds, lakes and reservoirs and excellent as food. A rather quiet bird whose voice is seldom heard.

**25. (144) *Aix sponsa* Linn.—Wood Duck; Summer Duck.**

*Description:* L. 19; W. 9. Male: head crested, metallic iridescent green and purple; white line over and behind eye; back black with green and gold gloss; breast chestnut; belly white; sides buff and black; speculum steel-blue; primaries tipped with greenish-blue. Female: similar but duller; beak reddish.



FIG. 61 Photo by W. A. Anderson  
WHERE THE WOOD DUCK NESTS  
A pond near Wickliffe, Ballard County

*Season:* Summer resident; breeds in the Purchase Region.

*Records:* By counties—Ballard "lots of them" (E. A. Whalin); Bath (C. F. Martin); Boone (W. D. Sutton); Carlisle (B. A. Hensley); Carroll "scarce" (R. C. Routt); Clay (L. A. Clark); Crittenden (J. R. Spencer); Gallatin (F. Irwin); Graves (B. H. Mitchell); Henderson (W. G. Turpin); Hickman (L. Jackson); LaRue (S. Kirkpatrick); Lawrence (G. C. Baker); Lewis (R. O. Bate); Livingston (H. Conkle); Nelson (B. J. Blincoe); Ohio (D. Carpenter); Owen (D. P. Morris); Pike (W. M. Wesley); Pulaski (D. Strunk); Warren, April 5, 1918; July 30, 1921 (G. Wilson); Bourbon Co. pair, March 29, 1923 (V. Dodge and W. D. F.).

*Remarks:*

The writer considers the male Wood Duck the most beauti-

ful bird in Kentucky. Unfortunately it is being hunted so persistently that it is becoming very scarce. It is sometimes called the "Tree Duck" because of its habit of building its nest in holes in trees and stumps. It prefers wooded swamps and is seldom seen in open water. It is easily domesticated and breeds well in captivity and if protected might be easily propagated in Kentucky.

**26. (146) *Marila americana* Eyt.—Redhead.**

*Description:* L. 19; W. 9. Male: head and upper half of neck red; lower neck, breast and rump black; back, scapulars and sides waved with white and black; belly snow-white. Female: head and neck grayish brown; upper parts grayish; underparts white.

*Season:* Rare migrant.

*Records:* Bourbon Co. April 18, 1890 (V. K. Dodge).

*Remarks:*

One of the most excellent of food ducks. Its flesh is considered by some to be finer than that of the Canvasback. In the spring the drake has a peculiar call of "qua-quaa", and in making it he throws his head far backward in a grotesque fashion.

**27. (147) *Marila valisineria* Wils.—Canvas back.**

*Description:* L. 21; W. 9. Male: head and neck reddish brown; back white with wavy dusky lines; shoulders, rump and upper tail-coverts black; breast black; belly white. Female: head, neck, breast and shoulders brown.

*Season:* Migrant.

*Records:* Bowling Green April 7, 1919 (G. Wilson); Lexington, March 15, 1920 (W. D. F.).

*Remarks:*

The most famous of all ducks from the standpoint of the sportsman and the epicure. Its flesh is certainly excellent but no better than that of a number of other ducks which have not been so well advertised. This duck is not common in Kentucky but is likely to be found feeding on any body of water where wild celery (*Vallisneria spiralis*) grows. Its specific name is taken from the botanical name of this plant, its favorite food.

**28. (148) *Marila marila* Linn.—Greater Scaup Duck; American Scaup Duck; Big Black-head; Blue-bill.**

*Description:* L. 19; W. 9. Male: head and neck black with green iridescence; back and scapulars gray, zig-zagged with black and yellow; beak blue; breast black; belly white. Female: base of beak white; brown where the male is black.

*Season:* Migrant if it occurs at all.

*Records:* Kentucky (Audubon).

*Remarks:*

Named because it does not "quack" but gives a harsh, discordant call supposed to sound like the word "scaup." We have only Audubon's record from this State.

**29. (149) *Marila affinis* Eyt. Lesser Scaup Duck.**

*Description:* Similar to Greater Scaup Duck but smaller in size and with the gloss of the head purple instead of green.

*Season:* Migrant.

*Records:* Lake Ellerslie 1908 (R. H. Dean); Woodford Co., four individuals (Mrs. L. Brodhead).

*Remarks:*

Apparently more common than the preceding species but hard to distinguish in the field.

**30. (150) *Marila collaris* Donovan.—Ring-necked Duck.**

*Description:* L. 17; W. 8. Male: head and upper neck black with greenish and purplish iridescence; a chestnut collar around the neck; upper parts black; scapulars gray; breast and belly white. Female: head, neck and breast brown; cheeks, chin and ring around eye white.

*Season:* Uncommon migrant.

*Records:* Kentucky (Audubon); Nelson Co. (Beckham).

*Remarks:*

This duck is sometimes called the "Ring-billed Duck" and the "Ring-billed Black-head" because its beak is ringed with black and bluish markings.



31. (151) *Clangula clangula americana* Bonap.—Golden-eye; Whistler.

*Description:* L. 20; W. 9. Male: head black and very fluffy; white spot in front of eye; back and most of wings black; a large white patch on wing; underparts white; iris of eye golden yellow; feet orange; beak greenish. Female: head brown and less puffy than male.

*Season:* Migrant.

*Records:* Henderson (Audubon); Kentucky (R. H. Dean); Graves Co. (W. D. F.).

*Remarks:*

A very shy bird, easily recognized by its stocky build, its very fluffy head on which the feathers project outward to form a puff, its characteristic black and white colors and its whistling sound when flying. Its flesh is not good.

32. (153) *Charitonetta albeola* Linn.—Buffle-head; Butter-ball; Dipper; Spirit Duck.

*Description:* L. 14; W. 6. Male: head and neck green, bronze and purple; a white band across back of head, reaching from eye to eye; back black; wings and underparts white. Female: head, neck and underparts gray-brown; auriculars and secondaries white.

*Season:* Migrant.

*Records:* Lexington March 30, 1913 (M. Didlake); May 14, 1916 (C. K. Morrell); Anderson Co. May, 1919 (W. D. F.).

*Remarks:*

This little duck is best known to the hunter on account of its remarkable ability as a diver. It usually escapes by diving rather than by flying. When disturbed it "dives at the flash"—a rather antiquated expression in these times of cartridges but an interesting reminder of the old days of flintlocks and percussion caps. When wounded it swims under water and when it comes to the surface to breathe it dodges about so suddenly that it makes an extremely difficult mark. Its body is very fat but the flesh is not well flavored.

33 (154) *Harelda hyemalis* Linn.—Old Squaw.

*Description:* L. 21; W. 9. (Female smaller). Tail long. Male (winter): head and neck white; cheeks gray; upperparts black; underparts white. Summer: Front of head gray; rest of head black. Female (winter): head and neck white; upperparts brown; breast gray. Summer: head, neck and upperparts dusky brown; white space around eye and on side of neck.

*Season:* Migrant.

*Records:* Owensboro March, 1908, taken on Ohio River (J. M. Demeece).

*Remarks:*

In addition to the color characters, this duck may be recognized by its long thin tail which resembles that of the Pintail. It is one of the swiftest flyers of all the ducks.

34. (163) *Oidemia americana* Swains.—American Scoter.

*Description:* L. 19; W. 9. Male: Entirely black; beak black with upper mandible yellow at base. Female: grayish brown above and white below.

*Season:* Very rare visitant.

*Records:* Bowling Green, April 6, 1912 (G. Wilson).

*Remarks:* A sea bird which rarely comes this far inland.

35. (167) *Erismatura jamaicensis* Gmel.—Ruddy Duck.

*Description:* L. 15; W. 6. Tail composed of 18 stiff feathers. Male: top of head black; beak bright blue; cheeks and chin white; throat and back red; rump black; underparts snow white. Female: brown above dotted with black; underparts grayish brown.

*Season:* Rare migrant.

*Records:* Bowling Green, April 7, 1919; April 18, 1921 (G. Wilson).

*Remarks:*

Recognized by the small size, round chunky body, small head, short neck and by the sky-blue beak of the male. Professor Eaton has noted over fifty popular names for this little

duck, including Dumpling Duck, Butter Duck, Sleepy-head, Booby-coot, Bumble-bee Coot, Bristle-tail, Chunk Duck, Paddy-whack, Shot-pouch, and Deaf Duck, all of which are more or less descriptive of its appearance or habits.

**36. (169) *Oen hyperboreus* Pall.—Snow Goose.**

*Description:* L. 25; W. 15. Plumage of both sexes entirely white except primaries which are black.

*Season:* A rare migrant if it occurs at all.

*Records:* Henderson (Audubon).

*Remarks:*

We are including this only because of the old record of Audubon. We have no record of it in recent years.

**37. (171) *Anser albifrons gambeli* Hartl.—White-fronted Goose.**

*Description:* L. 28; W. 16; T. 6. Forehead white; upperparts gray; rump and tail-coverts white; breast gray with black markings; belly white. Sexes alike.

*Season:* Rare migrant.

*Records:* Kentucky (Audubon).

*Remarks:*

An extremely rare visitor to Kentucky. It breeds in the Arctic regions and occasionally migrates into central United States. It is supposed to be quite common in the Mississippi Valley but we have never seen a living specimen.

**38. (172) *Branta canadensis* Linn.—Canada Goose; "Wild Goose".**

*Description:* L. 35; W. 18; T. 7. Head, neck and chin black; throat and a large patch on side of head white; back and wings grayish brown; breast gray; belly white. Sexes alike.

*Season:* Very common migrant; more often seen in spring.

*Records:* Lexington October 8, 1920 (W. Sams); October 1, 1921; February 2, 1922 (W. D. F.) Nelson Co. Jan. 31,

1921 (B. J. Blincoe); Bowling Green, February 26, May 7; September 22, November 12 (G. Wilson).

*Remarks:*

This is the common "wild goose" which flies in the V-shaped wedge in great numbers during the migrating season. Their "honks" high over head and their wonderfully regular formation in the air attract the attention not only of the ornithologist but of all who see or hear them. The migrations are always assumed to be heralds of spring or winter and their voices may often be heard at night far overhead when the birds can not be seen. They seldom break their long journey of several thousand miles by coming to earth and are seldom seen in Kentucky except in the air.

There is one unique record in Kentucky, however, of the wild goose not only alighting, but wintering in the State. This is on the farm of Mr. W. A. Huggins, about nine miles from Glasgow. About fifteen years ago, Mr. Huggins had six wild geese which he had raised from a pair secured with other wild birds for his place. That fall one other wild goose, going south, settled down with Mr. Huggins' domesticated specimens and spent the winter with him but left in June. The following fall, however, this bird returned with twelve others to share Kentucky hospitality. The next year the flock increased to between fifty and seventy-five and during the extremely cold winter of 1917 over three hundred of these beautiful birds were fed and protected. Each winter the geese remember the spot and break their long southward flight. Last winter about one hundred came with the first frost and remained until about the first of April. For a number of years one bird which had been crippled and was easily recognized always appeared with the others, but last winter he failed to return—a pathetic incident in the numerous tragedies of bird life.

**39. (180) *Olor columbianus* Ord.—Whistling Swan.**

*Description:* L. 54; W. 21 (extent 84). Plumage entirely white; beak and feet black; yellow spot on lores; iris dark brown.

*Season:* Rare winter visitant.

*Records:* Wickliffe, flock of 12 seen Sept., 1917 (G. Wilson)

*Remarks:*

A rare northern bird which wanders erratically over all of North America and occasionally visits Scotland and Bermuda

**40. (181) *Olor buccinator* Rich.—Trumpeter Swan.**

*Description:* L. 65; W. 23. Plumage entirely white; beak and feet black; lores naked; tail with 24 feathers.

*Season:* Probably extinct.

*Records:* Henderson (Audubon).

*Remarks:*

This wonderful swan, one of the largest and most beautiful of American birds, is now probably extinct. We are including it in the Kentucky list because of the Audubon record from Henderson. There is a specimen of this rare bird in the University of Kentucky collection but no data regarding locality or date of capture.

## ORDER HERODIONES—THE HERONS

*Characters:* Long-legged wading birds generally found along shores or in marshes; four toes all on the same level, seldom or not at all webbed; necks usually long; beaks long and pointed; lores bare.

**41. (188) *Mycteria americana* Linn.—Wood Ibis.**

*Description:* L. 40; W. 18. Legs long; beak not sharply pointed, rounded and curved downward; head and neck bare; plumage white except primaries, secondaries and tail which are black with metallic lusters. Sexes alike.

*Season:* Irregular summer resident.

*Records:* East Cairo (H. Garman).

*Remarks:*

A remarkable and interesting bird. It is over four feet long and stands very erect; its white plumage with black-tipped wings and tail and its enormous beak distinguish it at once in the field. It is not often seen in Kentucky since its regular range is south of us.

**42. (190) *Botaurus lentiginosus* Montag.—American Bittern; "Stake Driver".**

*Description:* L. 28; W. 10.5. Legs long; beak straight and sharply pointed; inner border of middle toe-nail with a comb-like edge; top of head and back of neck slate-blue; back brown mottled with buff; wings gray and brown; underparts yellowish, speckled with gray and brown; legs greenish. Sexes alike.

*Season:* Regular migrant.



Fig. 62 Photo by J. M. Miller  
THE HAUNT OF THE HERON

Kentucky River near Camp Nelson, where the Little Green Heron is abundant

*Records:* Bardstown, Mar. 27, April 13, 1916; Nov. 22, 1917 (B. J. Blincoe); Lexington, Apr. 8, 1911 (M. Didlake); Oct. 7, 1920 (W. Sams); June 1, 1921 (W. D. F.).

*Remarks:*

This bird is noted for its remarkable voice which has been likened to the sound of an old-fashioned wooden pump or to the driving of stakes and has earned for it the name of "booming" bittern. The method of making this mysterious sound



is not known. A fine powerful bird and a good fighter. One captured at Lexington had no difficulty in defending itself against a small dog even though it had a broken wing at the time.

**43. (191) *Ixobrychus exilis* Gmel.—Least Bittern.**

*Description:* L. 13; W. 4.5. Male: crown, back and tail glossy black; back of neck reddish; wings mottled reddish brown and yellowish; underparts yellowish; eyes yellow. Female: similar but reddish where the male is black.

*Season:* Rare migrant.

*Records:* Lexington, June 4, 1907 (M. Didlake); Bowling Green, May 1, 1920 (G. Wilson).

*Remarks:*

Quiet retiring little birds, very secretive in habits, and with a wonderful protective coloration. They are seldom seen and may be more common than is generally supposed. They frequent marshes and ponds where the vegetation is dense during their migrations.

**44. (194) *Ardea herodias* Linn.—Great Blue Heron.**

*Description:* L. 45; W. 18. Gray-blue above; neck brown; white line on throat; head black with a white patch in front and a crest of long feathers behind; underparts black with white markings; edges of wings brownish; beak and eyes yellow; lores and legs greenish; beak straight and pointed; legs long. Sexes alike in color but female is smaller.

*Season:* Summer resident.

*Records:* Nelson Co., April-Oct. (B. J. Blincoe); Lexington, April 9, 1911 (M. Didlake); Apr. 25, 1920 (D. J. Healy); Bowling Green, Apr. 12, 1919; Sept. 25, 1921 (G. Wilson); Ballard Co. (G. Wilson); Dix River, June 29, 1921 (W. Sams).

*Remarks:*

Sometimes mistakenly called "cranes". Beautiful large birds with powerful beaks which are capable of inflicting a severe wound. They are wonderful fishermen and feed chiefly on fish and frogs which they "spear" with their beaks. They

will stand motionless for hours waiting for an unsuspecting victim and are probably the most patient of all birds. When they fly, they curve their necks, resting their heads on their breasts.

**45. (196) *Herodias egretta* Gmel.—Egret.**

*Description:* L. 40; W. 15. Plumage entirely white; legs and feet black; beak yellow; lores orange. During the breeding season about fifty beautiful "aigrettes" or plumes grow from the back and extend beyond the tail. Sexes similar.

*Season:* Formerly a common migrant; now probably extinct in the State.

*Records:* East Cairo (H. Garman); Nelson Co. (C. W. Beckham); Fairfield 1881 (J. W. Fowler)

*Remarks:*

These were the birds which were ruthlessly slaughtered for their plumes until they have been practically exterminated. Since the birds bear the aigrettes only during the breeding season, the killing of the parents to satisfy the demands of the milliners usually meant the leaving of the young in the nests to starve.

**46. (197) *Egretta candidissima* Gmel.—Snowy Egret.**

*Description:* L. 24; W. 10. Similar to the preceding but smaller and the plumes are curved instead of straight

*Season:* Probably entirely exterminated in this State.

*Records:* Nelson Co., about 1880 (C. W. Beckham).

*Remarks:*

Chapman says of this bird:

"The 'curse of beauty' has numbered the days of this the most dainty and graceful of Herons. Formerly it was abundant in the South, now it is the rarest of its family. The delicate 'aigrettes' which it donned as a nuptial dress were its death warrant. Women demanded from the bird its wedding plumes, and man has supplied the demand. The Florida Egrets are near the verge of extermination and now he is pursuing the helpless birds to the uttermost parts of the earth. Mercilessly they are

shot down at their roosts or nesting-grounds, the coveted feathers are stripped from their backs, the carcasses are left to rot, while the young in the nest above are starving."

47. (200) *Florida caerulea* Linn.—Little Blue Heron.

*Description:* L. 22; W. 11. Head and neck chestnut; rest of plumage bluish slate, sometimes mottled with white; lores blue; legs and feet black. Sexes alike.

*Season:* Visitant.

*Records:* Ballard Co. (G. Wilson); Lexington, May 14, 1916; May 2, 1919 (C. K. Morrell); May 4, 1919; Apr. 25, 1920 (D. J. Healy); Bowling Green, Apr. 8—Sept. 23 (G. Wilson).

*Remarks:*

Not common in Kentucky but has been known to breed in Southern Indiana.

48. (201) *Butorides virescens* Linn.—Little Green Heron; "Fly-up-the-Creek"; "Shite-poke".

*Description:* L. 17; W. 7. Crown greenish black; head chestnut; green line below eye; back gray-green; wing coverts green margined with sordid white; underparts grayish. During the breeding season a long soft crest on head. Sexes similar. Nest: a rough collection of sticks in bush or low tree near water. Eggs: 3—6 pale blue.

*Season:* Common summer resident.

*Records:* Nelson Co., Apr. Sept. earliest arrival Apr. 25, 1920; latest departure. Sept. 23, 1917 (B. J. Blincoe); Lexington, May 10, 1919 (C. K. Morrell); June 5, 1904; May 14, 1905; Apr. 25, 1906; Apr. 21, 1907; June 12, 1910; May 14, 1911; May 2, 1914 (M. Dillake); Apr. 18, 1920 (D. J. Healy); Bowling Green, Apr. 18—Sept. 23 (G. Wilson); Ballard Co. (G. Wilson); Dix River, abundant in August (W. D. F.) Kentucky River, common throughout summer between Woodford and Anderson counties (W. D. F.).

*Remarks:*

Very common along our rivers. When startled, it rises suddenly with a hoarse cry and usually discharges its excretion at the same time.

49. (202) *Nycticorax naevius* Bodd.—Black-crowned Night Heron.

*Description:* L. 24; W. 12. Crown, upper back, and scapulars bright glossy greenish-black; forehead, lores and neck white; lower back, wings and tail gray; legs and feet yellow; two or three thin feathers about 6—8 inches in length extend from back of head. Sexes similar.

*Season:* Common migrant.

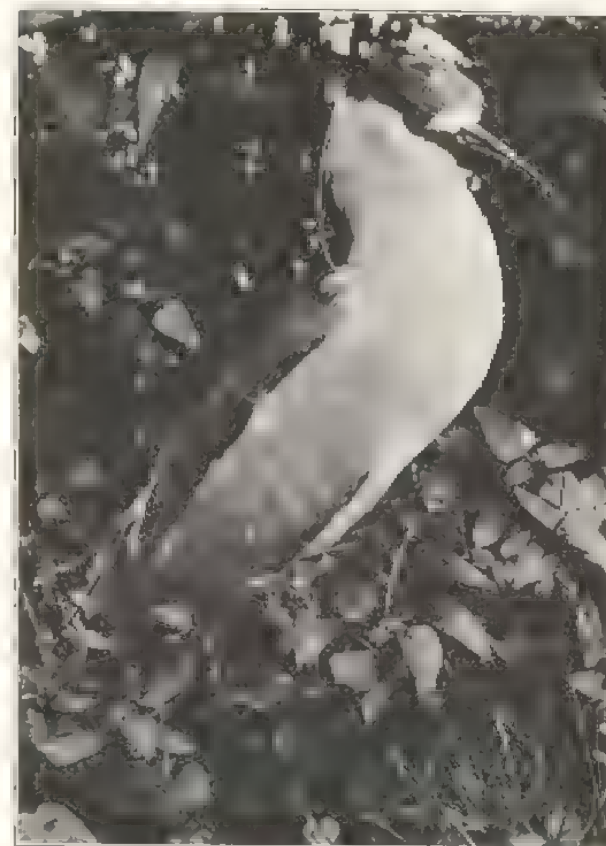


FIG. 43  
THE BLACK CROWNED NIGHT HERON  
One of a flock of twelve secured near Lexington by Mr. R. W. McMeekin.

**Records:** Nelson Co. May (C. W. Beckham); Lexington, 1920 (R. McMeekin); May 3, 1903 (M. Didlake); Apr. 6, 1920 (W. R. Campbell); Ballard Co. (G. Wilson).

**Remarks:**

Usually found in flocks both while feeding and while roosting. A very beautiful bird.

ORDER PALUDICOLAE—CRANES AND RAILS.

**Characters:** Long-legged and long-beaked wading birds; four toes without webs (except in coot which has lobes); hind toe generally small and higher than the others; lores feathered or with bristles.

50. (204) *Grus americana* Linn.—Whooping Crane.

**Description:** L. 50; W. 25. Plumage white except primaries which are black; head, cheeks and sides of throat naked and red. Sexes alike.

**Season:** Probably extinct.

**Records:** Kentucky (Audubon); Nelson Co. (C. W. Beckham).

**Remarks:**

One of the rarest of American birds. Has probably not occurred in Kentucky for fifty years.

51. (206) *Grus mexicana* Mull.—Sandhill Crane.

**Description:** L. 40; W. 20. Plumage gray with primaries black; top of head covered with rough, granular, reddish skin bearing short, black, hair-like feathers. Sexes alike.

**Season:** Rare visitant.

**Records:** Nelson Co. (E. E. McKay); Ballard Co. (G. Wilson).

**Remarks:**

Formerly often seen in Kentucky but now extremely rare.

52. (208) *Rallus elegans* Aud.—King Rail.

**Description:** L. 16; W. 7. Above, brownish-black; wing coverts chestnut; underparts cinnamon brown, paler on throat and middle of belly. Sexes alike.

**Season:** Rare migrant.

**Records:** Henderson (Audubon); Bowling Green, (S. F. Price).

**Remarks:**

A clever, secretive bird which is seldom seen even where it is common.

53. (212) *Rallus virginianus* Linn.—Virginia Rail.

**Description:** L. 9; W. 4. Coloration almost exactly as in preceding.

**Season:** Common migrant, most often seen in the spring.

**Records:** Henderson (Audubon); Nelson Co. (C. W. Beckham); Bowling Green, Sept. 18, 21, 1918 (G. Wilson); Tyrone May, 1920 (W. D. F.).

**Remarks:**

Very similar in appearance to the King Rail but much smaller. Found in marshes and swamps. Makes a curious grunting noise which is supposed to sound like that of a pig.

54. (214) *Porzana carolina* Linn.—Sora.

**Description:** L. 8; W. 4. Upperparts brown and black, mottled; front of head and throat black; gray line over eye; breast gray, speckled with white. Sexes alike.

**Season:** Common migrant, most often seen in fall.

**Records:** Nelson Co. Oct. 12 (C. W. Beckham); Aug., 1913 (B. J. Blincoe); Bowling Green, May 4, 1918 (G. Wilson); Lexington, Sept., 1919; Aug., 1920; Oct., 1921 (W. D. F.); Dix River, Aug., 1921 (W. D. F.).

**Remarks:**

The commonest of our rails. Two or three a year are usually brought to the laboratory at Lexington for determination.

55. (215) *Coturnicops noveboracensis* Gmel.—Yellow Rail.

**Description:** L. 6; W. 3. Above, brownish-black, mottled with white spots and dashes; below, light brown with middle of belly white; flanks reddish; yellow streak over eye. Sexes alike.

**Season:** Migrant.



**Records:** Kentucky (H. Garman); Nelson Co., Oct. 1 (C. W. Beckham); Woodford Co. June, 1921 (W. D. F.).

**Remarks:**

I believe this little rail is more common than is generally supposed, but it seldom flies when disturbed, preferring to hide or run, and so is seldom seen.

**56. (218) *Ionornis martinicus* Linn.—Purple Gallinule.**

**Description:** L. 13; W. 7. Head and neck purple; back greenish; wing coverts bluish; breast purple; belly black; beak red; legs yellow. Sexes alike.

**Season:** Rare visitant.

**Records:** Nelson Co. (C. W. Beckham); Bowling Green, Apr., 1916 (G. Wilson).

**Remarks:**

A Florida bird which only rarely comes as far north as Kentucky.

**57. (219) *Gallinula galeata* Licht.—Florida Gallinule.**

**Description:** L. 13; W. 7. Head and neck grayish black; back brownish black; wings and tail black with white markings; breast gray-black, belly lighter; beak red, tipped with yellow. Sexes alike.

**Season:** Migrant; most often seen in spring.

**Records:** Lexington, Oct. 4 (H. Garman); 1905 (Mrs. L. Brodhead); May 5, 1903 (M. Didlake); Woodford Co. May 8, 1904 (Mrs. L. Brodhead); Bowling Green, Aug. 24, 1921 (G. Wilson).

**Remarks:**

Another southern bird which, however, migrates rather commonly as far north as Indiana and Ohio.

**58. (221) *Fulica americana* Gmel.—Coot.**

**Description:** L. 15; W. 7.5. Toes with lobate webs; head and neck black; back and tail dark slate; wings dusky with white markings; undersurface light slate; beak sordid white. Sexes similar.

**Season:** Common migrant.

**Records:** Nelson Co. Apr. 5, 1916; Sept. 23, 1916 (B. J. Blincoe); Lexington (E. M. Shuhart); Mar. 30, 1905 (M. Didlake); Jan. 10, 1920 (W. Sams); Bowling Green, Mar. 30—May 5 (G. Wilson); Ballard Co. (G. Wilson); Jessamine Co. (W. D. F.).

**Remarks:**

At once recognized by the scalloped flaps on the toes. Very abundant around water in the fall.

ORDER LIMICOLAE—SHORE BIRDS.

**Characters:** Small, long-legged, slender-beaked birds with the hind toe less than half as long as the inner toe; beak soft and sensitive at the tip; wings long and pointed; legs naked.

**59. (222) *Phalaropus fulicarius* Linn.—Red Phalarope.**

**Description:** L. 8; W. 5.5. Toes with webs at base and lobes at tips; beak wider than deep and turned upward. Summer: crown dark brown; back black; wings gray with white and buff markings; underparts wine-red. Winter: head and underparts white. Sexes similar.

**Season:** A rare visitant if at all.

**Records:** Louisville 1808 (Audubon).

**Remarks:**

A queer little bird distinguished at once by its peculiar feet. Formerly a rare straggler in Kentucky during migrations. Not reported in recent years.

**60. (224) *Steganopus tricolor* Vieill.—Wilson's Phalarope.**

**Description:** L. 8; W. 4. (Female larger). Summer: crown and middle of back gray; nape white; black mark through eye; reddish streak down sides of back; throat white; breast brownish; belly white. Winter: upperparts gray and white; upper tail coverts white; wings dark brown; underparts white. Sexes similar.

**Season:** Very rare migrant.

**Records:** Kentucky (Audubon).

*Remarks:*

Formerly quite common in Kentucky and bred in Indiana. Now very rare if it occurs at all.

**61. (226) *Himantopus mexicanus* Mull.—Black-necked Stilt.**

*Description:* L. 15; W. 9. Male: head and back glossy greenish-black; rump white; tail gray; front of head white; white spot above eye and one below the eye; underparts white. Female: similar but brown where the male is black.

*Season:* Rare visitant.

*Records:* Woodford Co. May 6 and 7, 1921 (Mrs. L. Brodhead).

*Remarks:* A tropical shore bird seldom seen north of Florida.

**62. (228) *Philohela minor* Gmel.—Woodcock.**

*Description:* L. 11; W. 5. Above, mingled black, brown and gray; three outer primaries very narrow and stiff; occiput black, marked with thin yellow cross-lines; underparts reddish; tip of tail gray above, white below. Sexes similar.

*Season:* Regular migrant and occasional summer resident.

*Records:* Nelson Co. Nov. 15, 1915; Sept. 18, 1916; Nov. 18, 1919; July 18, 1921; (B. J. Blincoe); Lexington, Mar. 10, 1908 (M. Didlake); Oct. 24, 1920 (W. Sams); Bowling Green, Apr. 18, 1921 (G. Wilson); Ballard Co. Aug. 24, 1918 (G. Wilson); Madison Co., Sept., 1921 (W. D. F.).

*Remarks:*

Not a true "shore" bird as it does not frequent water and is often found on the uplands. Noted for its ability to pretend to be injured in order to entice intruders away from its nest. Has remarkable protective coloration. Flies with a sudden disconcerting sound. Is an excellent game bird and is being rapidly exterminated by hunters. Is sadly in need of protection in Kentucky.

**63. (230) *Gallinago delicata* Ord.—Wilson's Snipe.**

*Description:* L. 11; W. 5. Upperparts black, barred and mottled with reddish; wings dark brown with outer

primaries and tips of coverts white; throat white; neck and breast buff, streaked with black; belly white; sides marked with black; outer tail feathers barred with black and white. Sexes similar.

*Season:* Migrant, most often seen in spring; may winter in some localities.

*Records:* Nelson Co. Mar. 15, 1916; Mar. 15—Apr. 7, 1918; Feb. 18—Apr. 13, 1920; Apr. 3, 1921; Dec. 18, 1916; Nov. 10, 1917; Dec. 24, 1920 (B. J. Blincoe); Lexington, Apr. 9, 1911; Apr. 14, 1912; Apr. 6, 1913 (M. Didlake); Bowling Green, Mar. 9—May 11; Aug. 24—Nov. 2 (G. Wilson); Ballard Co. (G. Wilson); Clark Co. Oct., 1921 (W. D. F.).

*Remarks:*

Frequents swamps and marshes and rich bottom lands. The flesh is excellent and the sudden, rushing, tortuous flight of the bird makes shooting it a test of the hunter's ability. A fine game bird, becoming scarce

**64. (239) *Pisobia maculata* Vieill.—Pectoral Sandpiper.**

*Description:* L. 8; W. 5. Middle tail feathers projecting and pointed; upperparts black with the feathers bordered with yellowish; rump and upper tail coverts black; throat white; breast streaked with yellow and black; belly white. Sexes similar.

*Season:* Migrant.

*Records:* Bowling Green May 1-3; Aug. 23—Oct. 8 (G. Wilson); Ballard Co. (G. Wilson).

*Remarks:*

Frequents wet grassy meadows and is usually seen in flocks.

**65. (242) *Pisobia minutilla* Vieill.—Least Sandpiper.**

*Description:* L. 6; W. 3.5. Upperparts dusky, mottled with black and reddish; rump and middle tail, black; outer tail-feathers gray; throat white, breast sordid white streaked with brown; belly white; beak black; legs greenish. Color lighter in the winter. Sexes similar.

*Season:* Uncommon migrant

*Records:* East Cairo, Sept. (H. Garman); Lexington, May 3,

1903; May 14, 1910 (M. Didlake); Sept. 19, 1920 (W. Sams); Bowling Green, Apr. 15—May 14; Aug. 4—Sept. 7 (G. Wilson); Ballard Co. (G. Wilson).

*Remarks:*

The smallest of our sandpipers, generally found along the banks of streams or in marshes.

**66. (246) *Ereunetes pusillus* Linn.—Semipalmated Sandpiper.**

*Description:* L. 6; W. 4. Toes partially webbed. Above, mottled black, gray and brown with a slight tinge of reddish; rump grayish brown; upper tail coverts black; tail dark gray; dark line from beak to eye; underparts white with dark spots on breast. Lighter in winter. Sexes similar.

*Season:* Rare visitant.

*Records:* Henderson (Audubon); Lexington, Sept. 19, 1920 (W. Sams); Bowling Green, Sept. 4; May 1; Sept. 15 (G. Wilson).

*Remarks:*

Seldom found away from large bodies of water but occasionally stray into Kentucky from the Great Lakes region.

**67. (254) *Totanus melanoleucus* Gmel.—Greater Yellow-legs.**

*Description:* L. 14; W. 8. Beak very slender, grooved for half its length; legs very long, slender and yellow. Above, brown, marked with white and black; wings marbled brown and white, primaries brown; underparts white with brown markings. Markings paler in winter. Sexes similar.

*Season:* Visitant.

*Records:* Lexington, Apr. 18, 1920 (W. Sams); Bowling Green, Apr. 10—May 14 (G. Wilson).

*Remarks:*

A rare visitor from large bodies of water.

**68. (255) *Totanus flavipes* Gmel.—Yellow-legs.**

*Description:* L. 10; W. 6. Looks almost exactly like the preceding but is much smaller.

*Season:* Visitant.

*Records:* Lexington, Apr. 25, 1920 (D. J. Healy); Bowling Green, Mar. 27—May 7; Sept. 7; Sept. 15—Oct. 8 (G. Wilson).

*Remarks:*

Has the same habits and about the same range as the preceding.

**69. (256) *Helodromas solitarius* Wils.—Solitary Sandpiper.**

*Description:* L. 8; W. 5. Beak perfectly straight, grooved about to the middle. Above, olive-brown with a greenish tinge, flecked with white; tail and undersurface of wing black and white barred; underparts white, faintly spotted with brown. Markings not so prominent in winter. Sexes similar.

*Season:* Common migrant; most often seen in spring.

*Records:* Nelson Co. Sept. 19, 1919; Apr. 24, 29; May 1, 7, 1920 (B. J. Blincoe); Lexington, May 4, 1919 (C. K. Morrell); May 18, 1919; Apr. 25, 1920 (D. J. Healy); Bowling Green, Apr. 10—May 17; July 28—Oct. 11 (G. Wilson); Ballard Co. (G. Wilson); Anderson Co. June, 1919 (W. D. F.).

*Remarks:*

Generally found in thickly wooded regions along streams

**70. (258) *Catrophorus semipalmatus* Gmel.—Willet.**

*Description:* L. 15; W. 8. Beak stout and grooved for half its length; above, olive brown with black spots; underparts white with wedge-shaped black marks on breast and sides; wings with broad white patch across middle. Sexes similar.

*Season:* Rare visitant if it occurs at all

*Records:* Ohio River (Audubon).

*Remarks:*

Popular name derived from its call which is supposed to sound like "pilly-will-willet". No record since Audubon's.



**71. (261) *Bartramia longicauda* Bechst.—Upland Plover.**

*Description:* L. 12; W. 7. Head and neck dusky; back golden brown streaked with black; rump and tail brown; wings brown, outer primary barred with white; underparts yellowish brown, barred with black. Sexes similar.

*Season:* Migrant and summer resident.

*Records:* Kentucky (Audubon); Lexington, Sept. (H. Garman); Fayette Co. July—Sept. (W. D. F.).

*Remarks:*

As common name would indicate, this bird is not limited to swamps and marshes nor even to streams. It is found in high and dry regions and in some years is fairly common.

**72. (263) *Actitis macularia* Linn.—Spotted Sandpiper.**

*Description:* L. 7; W. 4. Above, olive-brown; broad white line over eye; wings olive-brown, secondaries white-tipped, inner primaries with white spot; tail brown; underparts white with prominent brown spots; beak yellow, tipped with black. Sexes similar.

*Season:* Common migrant; most often seen in spring.

*Records:* Fayette Co. Apr.—June (W. D. F.); Nelson Co. Apr. 5—10 (C. W. Beckham); Sept. 21, 1919 (B. J. Blincoe); Lexington, Apr. 26, 1906; May 11, 1913 (M. Didlake); May 16, 1920 (W. Sams); Bowling Green, Mar. 29—Oct. 13, (G. Wilson).

*Remarks:*

A dainty little bird which, from its peculiar habit of alternately bowing its head and elevating its tail as though it were trying to balance itself, is often called "Tip-up" or "Teeter-snipe". It is usually seen along the margins of streams.

**73. (272) *Charadrius dominicus* Mull.—Golden Plover.**

*Description:* L. 10.5; W. 7. Hind toe absent. Upperparts black, spotted with golden; broad white band over eye and continuing down sides; underparts entirely black. Sexes similar.

*Season:* Migrant.

*Records:* Lexington (H. Garman).

*Remarks:*

Formerly very abundant throughout the State; now becoming scarce. Usually found in uplands in flocks of ten to twenty. We believe that our lack of records regarding this bird is largely due to the fact that observers are not confident of their identifications.

**74. (273) *Oxyechus vociferus* Linn.—Killdeer.**

*Description:* L. 10; W. 6. Beak short with fleshy tip; above, solid brown; white spot in front of eye; two broad black bands on front of throat; underparts immaculate white; beak black; eyelids red. Sexes similar. Nest on ground. Eggs: 4, yellowish with chocolate markings on larger end.

*Season:* Common permanent resident.

*Records:* Fayette Co. Apr.—Sept. (W. D. F.); Nelson Co. fresh eggs March 29, 1921 (B. J. Blincoe); Lexington, Apr. 16, 1916; Mar. 30, 1917; Feb. 23, 1919 (C. K. Morrell); May 3, 1903; Mar. 17, 1906; Apr. 25, 1909; May 1, 1910; Apr. 29, 1911; May 18, 1913 (M. Didlake); May 4, 1919; Apr. 11, 1920 (D. J. Healy); Jan. 10, 1920 (W. Sams); Bowling Green, (G. Wilson); Ballard Co. (G. Wilson); Woodford Co. (W. D. F.); Bourbon Co. Mar. 29, 1923 (V. Dodge).

*Remarks:*

Abundant along our streams. Gets its popular name from its plaintive call of "kill-deer" or "kill-dee". Nests on the ground and the four eggs are placed with their small ends together to form a cross.

**75. (274) *AEgialitis semipalmata* Bonap.—Semipalmated Plover.**

*Description:* L. 7; W. 5. Beak short, yellow with dark tip; toes webbed at base. Crown, back, wings and tail brown; forehead white; black line in front of eye; white ring around neck and below this a black band on throat; remainder of underparts white. Sexes similar.

*Season:* Rare visitant.

*Records:* Lake Ellerslie, Sept. 8, 1912 (V. K. Dodge).

*Remarks:*

Probably seldom comes south of the Ohio River but is still reported occasionally in Indiana.

76. (280) *Ochthodromus wilsonius* Ord.—Wilson's Plover.

*Description:* L. 7.5; W. 4.5. Male: crown and lores black; forehead, line over eye, and throat white; black band on breast; back brownish-gray; underparts white. Female: similar but gray-brown where the male is black.

*Season:* Rare visitant.

*Records:* Lexington, Apr. 20, 1917; May 12, 1918 (C. K. Morrell).



FIG. 64 Photo by W. R. Johnson  
GOOD COVER FOR BIRDS  
Characteristic faunal area in Edgett County

*Remarks:*

A strictly maritime species of the Gulf States which seldom comes as far north as Kentucky.

## ORDER GALLINAE—SCRATCHING BIRDS.

*Characters:* Terrestrial birds of chicken-like appearance; beak short and stout, fitted for pecking; wings short and rounded, the primaries stiff; feet strong, hind toe short and elevated.

77. (289) *Colinus virginianus* Linn.—Quail; "Bob-White".

*Description:* L. 10; W. 4.5. Male: top of head chestnut, feathers erectile; white line over eye extending down sides of neck; cheeks black; chin and throat white with black band below; back chestnut mottled with black; underparts grayish red with black bars. Female: similar but with throat buff instead of white and with other markings less vivid. Nest: of arched grasses on the ground. Eggs: 10—18, white.



Photo by James Speed  
FIG. 65  
THE QUAIL  
A fine game bird which is increasing in Kentucky

*Season:* Permanent resident.

*Records:* From practically every county in the State. Nelson Co. nest with 14 eggs May 23, 1913; 19 eggs June, 1913 (B. J. Blincoe).

*Remarks:*

The quail have apparently become much more numerous during the past two years due to increased protection and mild winters. After breeding, the parents and young live to-

gether as a covey or "bevy". They roost together on the ground, tails together and heads outward, and when disturbed rise and scatter with disconcerting suddenness. Their protective coloration is excellent and they can hide, even when very young, in a most clever fashion. The cheery mating call of the male has given them the common name of "Bob-White". After the breeding season the scatter calls are quite different and are supposed to resemble the syllables "Where are you?"

A fine game bird which deserves every protection. Cold weather, lack of food, and the pot-hunter, are their worst enemies.

**78. (300) *Bonasa umbellus* Linn.—Ruffed Grouse; "Partridge".**

*Description:* L. 17; W. 7; T. 6. Upperparts reddish with variegated markings of black, yellow, white and gray; sides of neck with tufts of broad glossy black feathers which are long in the male and very short in the female; tail gray, tinged with reddish and irregularly mottled with black; underparts reddish-white with brown bars. Nest: Shallow depression lined with leaves and grass at base of tree or stump. Eggs: 9—12, pale reddish-brown.

*Season:* Permanent resident; rare.

*Records:* Kentucky (H. Garman); Nelson Co. (B. J. Blincoe).

*Remarks:*

One of the finest of game birds. Best known on account of its "ruff" of feathers on the neck and the habit of the male of "drumming" during the mating season. This wonderful rolling drum-beat is now seldom heard in Kentucky, however, as the bird has been almost exterminated by hunters.

**79. (305) *Tympanuchus americanus* Reich.—Prairie Chicken.**

*Description:* L. 18; W. 9; T. 4. Upperparts reddish, spotted with black; sides of neck with an erectile tuft of ten or more stiff feathers with rounded ends; tail rounded, reddish with white tip; throat buff; breast and belly white with regular black bars.

*Season:* Probably now exterminated in Kentucky.

*Records:* Kentucky (Audubon).

*Remarks:*

Formerly very abundant throughout the State but have not been reported for many years. Audubon states that when he first came to Kentucky these birds "were so abundant that they were held in no higher estimation as food than the most common flesh and no hunter of Kentucky deigned to shoot them."

**80. (310a) *Meleagris gallopavo silvestris* Vieill.—Wild Turkey.**

*Description:* L. 48—50; W. 21; T. 19. Very similar to domestic turkey but male has long, coarse, black bristles on breast and has the tail tipped with black, while the female has the tail tipped with reddish. Nest: On ground lined with leaves and grass. Eggs: 10—14, creamy, spotted with brown.

*Season:* Permanent resident.

*Records:* By counties in 1922—Bell (R. H. Shipp); Breathitt (G. W. Thompson); Clay (L. A. Clark); Cumberland (C. S. Payne); Harlan (J. Metcalf); Hickman (J. Jackson); Jackson (W. R. Reynolds); Knott (A. Campbell); Knox (E. Mayhew); LaRue (J. N. Jones); Laurel (F. B. Wilson); Leslie (M. O. Fairchild); Lincoln (W. A. Brent); Pike (W. M. Wesley); Pulaski (D. Strunk); Taylor (J. L. Miller).

*Remarks:*

Chapman says "This noblest of American birds is rapidly decreasing in numbers, and in comparatively few years will doubtless be found only in the parts of its range which are unfit for the habitation of man."

It is still quite common, however, in many parts of Kentucky. The Lexington Herald of Nov. 23, 1921, gives the following account of game in Eastern Kentucky:

"Laurel, Knox, Whitley and Bell counties have an especially large number of quail and rabbits, hunters declare, and the border lands along Bell and Whitley counties adjoining Virginia and Tennessee are a paradise for game.

Added to the rabbit and quail are a number of large flocks of wild turkeys. According to the reports, the wild turkeys have been located with more frequency in Whitley and Laurel counties than the others of that section. The



area about the Cumberland River in these two counties has proven to be the favorite haunts of the turkeys, according to hunters who have been in that section."

The Lexington Leader under date of Jan. 11, 1922, records the arrest of three men in McCreary County for killing wild turkeys in violation of the game laws.

From the list of counties above from which wild turkeys were reported in 1922 it is evident that this bird is not so uncommon in Kentucky as has been supposed. Mr. Claude Meridith of the State Game and Fish Commission reports hundreds of the birds on the 70,000 acre State Game Preserve lying partly in Trigg and partly in Lyon counties.

#### 81. *Phasianus colchicus* Linn.—English Pheasant.

*Description:* Size variable. Male: head and neck green; back brown; rump red; breast reddish, mottled with black. Female: above, brown, mottled with black; below yellow brown. Nest: on ground under cover. Eggs: 12—20, uniform brown.

*Season:* Permanent resident

*Records:* From most of the counties of the State but the species recorded are doubtful. Probably both this and the following species and their hybrids are common.

#### *Remarks:*

The pheasants are not native to this country but many have been introduced into Kentucky by owners of estates and these birds seem to be thriving after release. Most are artificially bred birds and many are crosses between the English and the Ring-neck, so that the characters are very variable. It is a fine game bird and it is to be hoped that it will become well established in this State.

#### 82. *Phasianus torquatus* Gmel.—Ring-necked Pheasant.

*Description:* Size and coloration variable but usually distinguished by a white ring around the neck and the rump gray.

*Season:* Permanent resident.

*Records:* Same as preceding. We can not be sure which species is indicated by records. Apparently both are common.

#### *Remarks:*

Like the preceding, this is an introduced bird of questionable lineage, most stocks having been crossed with the English form. It is doing well in Kentucky.

#### ORDER COLUMBAE.—PIGEONS AND DOVES.

*Characters:* Four toes on the same level, the hind toe as long as the shortest front toe; beak slender and deeply grooved, with a fleshy base.

#### 83. (315) *Ectopistes migratorius* Linn.—Passenger Pigeon; "Wild Pigeon".

*Description:* L. 16; W. 8; T. 7.5. Upperparts bluish-slate with iridescent sheen; middle of back and scapulars washed with olive brown; outer tail feathers black at base and tipped with white; underparts wine-colored, with throat bluish and belly whitish. Sexes similar

*Season:* Probably extinct.

*Records:* None certainly authentic in the last fifty years.

#### *Remarks:*

Although the wild pigeon is still occasionally reported as having been observed in the State, it is very doubtful that these records are authentic. In all probability this pigeon is gone forever. Yet plenty of men still living can recall the days when these birds were so abundant that they were slaughtered in great numbers and undoubtedly Kentucky was one of their most famous feeding grounds.

No more graphic description can be given of their former abundance than the following account by Audubon of one of the pigeon roosts in this State:

"Let us now, kind reader, inspect their place of nightly rendezvous. One of these curious roosting places, on the banks of the Green River in Kentucky, I repeatedly visited. It was, as is always the case, in a portion of the forest where the trees were of great magnitude, and there was little underwood. I rode through it upwards of forty miles, and, crossing it in different parts, found its average

breadth to be rather more than three miles. My first view of it was about a fortnight subsequent to the period when they had made choice of it, and I arrived there nearly two hours before sunset. Few pigeons were then to be seen, but a great number of persons, with horses and wagons, guns and ammunition, had already established encampments on the borders.

Two farmers from the vicinity of Russellville, distant more than a hundred miles, had driven upwards of three hundred hogs to be fattened on the pigeons which were to be slaughtered. Here and there, the people employed in plucking and salting what had already been procured, were seen sitting in the midst of large piles of these birds. The dung lay several inches deep, covering the whole extent of the roosting place, like a bed of snow. Many trees two feet in diameter, I observed, were broken off at no great distance from the ground; and the branches of many of the largest and tallest had given way, as if the forest had been swept by a tornado. Everything proved to me that the number of birds resorting to this part of the forest must be immense beyond conception. As the period of their arrival approached, their foci anxiously prepared to receive them. Some were furnished with iron pots containing sulphur, others with torches of pine knots, many with poles, and the rest with guns. The sun was lost to our view, yet not a pigeon had arrived. Everything was ready, and all eyes were gazing on the clear sky, which appeared in glimpses amidst the tall trees. Suddenly there burst forth a general cry of "Here they come." The noise which they made, though yet distant, reminded me of a hard gale at sea passing through the rigging of a close-reefed vessel. As the birds arrived and passed over me, I felt a current of air that surprised me. Thousands were seen knocked down by the pole-men. The birds continued to pour in. The fires were lighted, and a magnificent, as well as wonderful and almost terrifying sight presented itself. The pigeons, arriving by thousands, alighted everywhere, one above another, until solid masses as large as hogsheads were formed on the branches all around. Here and there the perches gave way under the weight with a crash, and, falling to the ground destroyed hundreds of the birds beneath, forcing down the dense groups with which every stick was loaded. It was a scene of uproar and confusion. I found it quite useless to speak, or even to shout to those persons who were nearest to me. Even the reports of the guns were seldom heard, and I was made aware of the firing only by seeing the shooters reloading.

No one dared venture within the line of devastation. The hogs had been penned up, in due time, the picking up of the dead and wounded being left for the next morning's employment. The pigeons were constantly coming, and it was past midnight before I perceived a decrease in the number of those that arrived. The uproar continued the whole night, and as I was anxious to know to what distance the sound reached, I sent off a man, accustomed to perambulate the forest, who, returning two hours afterwards, informed me he had heard it distinctly when three miles distant from the spot. Toward the approach of day, the noise in some measure subsided, long before objects were distinguishable, the pigeons began to move off in a direction quite different from that in which they had arrived the evening before, and at sunrise all that were able to fly had disappeared. The howling of wolves now reached our ears, and the foxes, lynxes, cougars, bears, raccoons, opossums, and pole-cats were seen sneaking off, whilst eagles and hawks of different species, accompanied by a crowd of vultures, came to supplant them and to enjoy their share of the spoil.

It was then that the authors of all this devastation began their entry amongst the dead, the dying and the mangled. The pigeons were picked up and piled in heaps, until each had as many as he could possibly dispose of, when the hogs were let loose to feed on the remainder."

Another very interesting Kentucky record given by Audubon is the following:

"In the autumn of 1813, I left my house at Henderson on the banks of the Ohio, on my way to Louisville. In passing over the Barrens a few miles beyond Hardensburgh, I observed the pigeons flying from northeast to southwest, in greater numbers than I thought I had ever seen before, and feeling an inclination to count the flocks that might pass within the reach of my eye in one hour, I dismounted, seated myself on an eminence, and began to mark with my pencil, making a dot for every flock that passed. In a short time, finding the task which I had undertaken impracticable, as the birds poured in in countless multitudes, I rose, and counting the dots then put down, found that one hundred and sixty-three had been made in twenty-one minutes. I traveled on, and still met more the farther I proceeded. The air was literally filled with pigeons; the light of noonday was obscured as by an eclipse; the dung fell in spots, not unlike melting flakes of snow; and the continued buzz of wings had a tendency to lull my senses

to repose. . . . . Before sunset I reached Louisville, distant from Hardensburgh fifty-five miles. The pigeons were still passing in undiminished numbers, and continued to do so for three days in succession."

Alexander Wilson, writing about 1808, estimated that a flock of Passenger Pigeons observed by him between Shelbyville and Frankfort contained 2,230,272,000 birds and figured that this flock would eat 17,424,000 bushels of mast a day. Regarding this flock he says:

"I had left the public road to visit the remains of the breeding place near Shelbyville, and was traversing the woods with my gun, on my way to Frankfort, when, about one o'clock, the pigeons, which I had observed flying the greater part of the morning northerly, began to return in such immense numbers as I had never before witnessed. Coming to an opening by the side of a creek called the Benson, where I had a more uninterrupted view, I was astonished at their appearance. From right to left, far as the eye could reach, the breadth of this vast procession extended, seeming everywhere equally crowded. Curious to determine how long this appearance would continue, I took out my watch to note the time and sat down to observe them. It was then half past one. I sat for more than an hour, but, instead of a diminution of this prodigious procession, it seemed rather to increase both in numbers and rapidity, and, anxious to reach Frankfort before night, I rose and went on. About four o'clock in the afternoon I crossed the Kentucky River at the town of Frankfort, at which time the living torrent above my head seemed as numerous and extensive as ever."

Not only were the enormous flocks of pigeons the subject of comment by the early writers, but their roosts attracted much attention. In addition to the famous roost near the Green River which was described by Audubon, we have an account of a similar roost somewhere near Shelbyville which was described by Wilson\* as follows:

"Not far from Shelbyville, in the State of Kentucky, there was one of these breeding places which stretched through the woods in nearly a north and south direction and was several miles in breadth, and was said to be upwards of

forty miles in extent! In this tract almost every tree was furnished with nests, wherever the branches could accommodate them. The pigeons made their first appearance about the 10th of April, and left it altogether, with their young, before the 25th day of May. As soon as the young were fully grown, and before they left the nests, numerous parties of the inhabitants, from all parts of the adjacent country, came with wagons, axes, beds, cooking utensils, many of them accompanied by the greater part of their families, and encamped for several days at the immense nursery. Several of them informed me that the noise in the wood was so great as to terrify their horses, and that it was difficult for one person to hear another speak without bawling in his ear. The ground was strewn with broken limbs of trees, eggs, and squab pigeons, which had been precipitated from above, and on which herds of hogs were fattening. Hawks, buzzards, and eagles were sailing about in great numbers, and seizing the squabs from their nests at pleasure while from twenty feet upwards to the tops of the trees the view through the woods presented a perpetual tumult of crowding and fluttering multitudes of pigeons, their wings roaring like thunder, mingled with the frequent crash of falling timber, for now the axe-men were at work cutting down those trees that seemed to be most crowded with nests, and continued to fell them in such a manner that in their descent they might bring down several others, by which means the falling of one large tree sometimes produced two hundred squabs, little inferior in size to the old ones, and almost one mass of fat. On some single trees upwards of one hundred nests were found. It was dangerous to walk under these flying and fluttering millions, from the frequent falling of large branches, broken down by the weight of the multitudes above, and which, in their descent, often destroyed numbers of the birds themselves, while the clothes of those engaged in traversing the woods were completely covered with the excrements of the pigeons."

In spite of the fact, however, that Kentucky was the home of unnumbered thousands of these beautiful birds and that numerous roosts such as have been described must have been located in various parts of the State, there are very few of these localities actually known. It is most desirable that persons knowing definitely of the sites of such roosts should re-

\*Wilson Alexander. American Ornithology 1810.



port them so that they may be recorded, for in another generation the matter will be only a tradition.

In attempting to definitely locate some of these breeding places we have found it extremely difficult to secure anything like authentic and unquestionable records but for a few localities reliable data have been obtained.

The exact location of the famous roost described by Audubon is still in doubt, but a historic roost which well answers the description was located on the north side of Green River about four and one-half miles east of Munfordville in Hart County on the land which at present is the Richardson farm. Mr. R. Lee Boyd, who lives in the vicinity, assures me that this roost answers in all particulars to the Audubon account.

In regard to the roost near Shelbyville, described by Wilson we can find no records either in the literature or the local traditions of the region which will place it exactly. Unfortunately, Wilson does not state in which direction from Shelbyville the woods were, and the words "not far" are of course indefinite.

Other roosts have been located more accurately. Dr. Robertson reports (W. R. Campbell's records) that there was once a roost on what is now the campus of Berea College.

Through the courtesy of Mr. T. T. Gardner of Bowling Green and Mr. Luther Shobe of Oakland, we have been able to positively locate a roost within a mile of the latter place. Mr. Gardner wrote us regarding this roost as follows:

"When I was a boy I recall that considerable flocks of these birds were to be seen near my home in the neighborhood of Oakland, Kentucky, and it was the ambition of my life then to kill one of them, though that ambition was never gratified.

My father used to tell me of the enormous numbers of them that "roosted" in the wooded country in the neighborhood of Oakland, Kentucky. It is the boast of many farmers now living in that community that their farm lands were made rich by pigeons and that they are still rich on account of them.

As far back as I can remember.....I saw those pigeons passing my father's house about three or four miles south of Oakland. As I recall them there were considerable droves of them, possibly thousands—that may have been childish exaggeration—and as the autumns came these

birds continued to come, but in decreasing numbers. When I was ten years of age my father moved with his family to Bristow about six miles south of Oakland. There I saw these birds each autumn for several years in the oak groves that surrounded our home, and it was there I tried so hard to get near enough to one to shoot it with my old army musket, but was never successful. They continued to come there until about 1880. I do not recall having seen one since."

Mr. Gardner referred us to Mr. Shobe who was able to definitely locate the roost as follows:

"The roost was one mile from this place (Oakland) and the land is very rich now. It is on the Cowles place. ....In the 50's and 60's they were very abundant and roosted on small timber.....they were killed with poles eight or ten feet long, and we youngsters used to eat the beechnuts which we found in their craws. ....usually they were killed at night by the bag full.

This gives us, for this locality, an actual record, even to the present owners of the land, which may be preserved for posterity.

Another excellent record has been received from Mr. Charles G. Pearl of London, Kentucky. Mr. Pearl writes as follows:

"In regard to the location of the farm on which the old pigeon roost was located, I have this information: The central part of the roost was on the farm now owned by William Jones, which is known as the old Jimmie Jones farm, three and one-half miles south-west of London, Kentucky, on the old Bob Early road (road derived its name from the man who built it). ....An old citizen who visited this roost states that they fattened hogs on the pigeons."

Mr. Pearl quotes his uncle, Mr. E. H. Hackney of London, as remembering that the area on which the birds roosted was about half a mile wide and two and a half to three miles long, and states:

"The conditions here were about the same as those described for the Green River roost. People went to the roost and shot them by the sack full and carried them home, eating only the breast part. ....He estimates that there were several millions of them roosting here at that time."

Dr. W. R. Jillson has located the site of a very large roost in Price's Valley an intermittent tributary stream flowing southwest into Buck Creek in eastern Pulaski County. Dr. Jillson has also been given an account of a former large roost in Laurel County between the Rockcastle River, the L. & N. Railroad, and north of Hawk Creek, but the exact extent of this site is not known.

Mr. J. S. Hudnal states (W. R. Campbell's records) that in 1835 the pigeons bred in Warren County, nesting in beech and small trees and roosting in post oaks. These birds came down Green River and after feeding on mast went north. Here again the exact site is not known.

We can find no records of roosts along the Ohio River. Mr. Henry Longest, of Louisville, who has had a long and wide experience with birds writes:

"As I am seventy-five years old I remember something about them (wild pigeons), having been born and lived on a farm in Jefferson County. Along about 1858 to 1860 I remember seeing the wild pigeons passing north and south and how I used to try to shoot some of them, but they were hardly ever low enough for me to kill many. I wish I could locate some of their roosts but I can not."

Mr. William Taylor of Lexington recalls accounts by his father of pigeons roosting near Greensburg, somewhere in the neighborhood of Meadow Creek and Whitewood, but we have been unable to get information concerning this site.

Again, the post-office of Pigeonroost in Clay County would certainly suggest that the station had derived its name from local tradition regarding such a site.

It is evident, however, that most of the information regarding these most interesting localities is still locked up in the memories of a few individuals and will soon be entirely lost.

**84. (316) *Zenaidura macroura carolinensis* Linn.—Mourning Dove; Turtle Dove.**

*Description:* L. 12; W. 6; T. 6. Upperparts olive-brown; crown bluish; a small black spot above each ear; breast purplish-red; belly yellowish; beak black; feet red. Sexes similar but female paler in color. Nest: rough, loose col-

lection of twigs on lower branches of tree. Eggs: usually one or two, white.

*Season:* Common permanent resident.

*Records:* Fayette Co., every month in the year 1920 (W. D. F.); Nelson Co. eggs hatching May 3, 1916; young 5—6 days old Apr. 14, 1918; eggs heavily incubated Aug 12, 1916; eggs slightly incubated Mar. 28, 1921; young leaving nest Aug. 26, 1921 (B. J. Blincoe); Bowling Green (G. Wilson); Ballard Co. (G. Wilson); London (C. G. Pearl); Harlan Co. Apr. 27, 1923 (V. Dodge and W. D. F.).

*Remarks:*

Generally seen in small flocks. Fly rapidly with a whistling sound. Are commonly hunted as a game bird in Kentucky. Flesh is excellent. The sad, sweet plaintive call of the male has given the bird the name of "mourning" dove. Of its notes Chapman says: "they are uttered slowly and tenderly and with such apparent depth of feeling that one might easily imagine the bird was mourning the loss of its mate instead of singing a love song to her"

ORDER RAPTORES.—BIRDS OF PREY.

*Characters:* Powerful birds with hooked beaks, strong feet and toes and long curved claws; feed chiefly on other animals.

**85. (325) *Cathartes aura septentrionalis* Wied.—Turkey Vulture; "Buzzard".**

*Description:* L. 30; W. 22; T. 11. Head and upper neck naked, the skin red with a few bristles; beak white; plumage entirely black. Sexes alike. Nests: in Kentucky chiefly in caves. Eggs: 1—3, white, spotted with brownish and reddish.

*Season:* Very common permanent resident.

*Records:* From practically every county in the State. Fayette Co., every month in year 1920 (W. D. F.); Bourbon Co.; Woodford Co.; Anderson Co. (W. D. F.); Nelson Co., fresh eggs Apr. 12, 1920 (B. J. Blincoe).

*Remarks:*

This is our common "buzzard" (although this name should not be used from a strictly scientific standpoint) which is too well known to need discussion. Its circles on broad, almost motionless wings, are familiar to all Kentuckians. It is an excellent scavenger and a desirable bird. The buzzard has practically no sense of smell, which suggests a most fortunate provision of Nature, but its sense of sight is very keen.

86. (326) *Catharista urubu* Vieill.—Black Vulture; "Carriion Crow".

*Description:* L. 24; W. 17; T. 8. Head and neck bare with black skin; plumage glossy black with the undersurface of the wings grayish white. Sexes alike. Nest: on the ground under bushes. Eggs: 1—3, bluish white with faint brown markings.

*Season:* Permanent resident.

*Records:* Tyrone (H. Garman); Nelson Co. eggs heavily incubated Apr. 12, 1920 (B. J. Blincoe); Bowling Green, common, (G. Wilson); Ballard Co., rare, (G. Wilson).

*Remarks:*

Similar to the buzzard but smaller and of a more stocky build. Easily distinguished by the square tail, short wings with the whitish undersurface, and by the black skin on head and neck.

87. (327) *Elanoides forficatus* Linn.—Swallow-tailed Kite.

*Description:* L. 24; W. 17; T. 14. Beak hooked; head feathered; tail forked; head and neck white; back black; rump white; tail black; wings black above and white below. Sexes alike.

*Season:* Visitant.

*Records:* Falls of Ohio River (Audubon)

*Remarks:*

Formerly a summer resident; now not reported from any section.

88. (331) *Circus hudsonius* Linn.—Marsh Hawk; "Harrier".

*Description:* L. 19; W. 13; T. 9. Male: above, blue-gray; upper tail coverts white; breast gray; belly white, spotted with reddish. Female: above, brown; head and neck reddish; rump white; belly streaked with brown.

*Season:* Migrant; occasional winter resident.

*Records:* Lexington (H. Garman); Nelson Co. arr. Oct. 26, 1917; Nov. 2, 1919; Oct. 13, 1920; dep. Feb. 5, 1918; Apr. 18, 1921 (B. J. Blincoe); Bowling Green, Sept. 4—Mar. 23 (G. Wilson); Ballard Co. Sept. 13, 1917; Sept. 4, 1918 (G. Wilson).

*Remarks:*

Always found in open country; avoids wooded regions. Perches low but flies high. An omnivorous eater and feeds largely on other birds, mice, frogs and insects. Probably does more good than harm.

89. (332) *Accipiter velox* Wils.—Sharp-shinned Hawk; "Chicken-Hawk".

*Description:* L. 11; W. 6; T. 5. Female larger. Above, bluish-gray; tail square with prominent black cross-bands; throat white, marked with reddish and brownish and with white and black streaks; breast and belly white with brown markings. Sexes similar. Nest: in trees 20—50 feet up, lined with leaves and bark. Eggs: 4—5, greenish white, strongly marked with brown.

*Season:* Permanent resident

*Records:* Lexington (H. Garman); Nelson Co. breeds, (B. J. Blincoe); Bowling Green (G. Wilson); Ballard Co. (G. Wilson); Anderson Co.; Woodford Co.; Bell Co.; Harlan Co. (W. D. F.).

*Remarks:*

A deadly enemy to poultry, game birds and song-birds. Deserves no mercy. Is supposed to be voiceless.

90. (333) *Accipiter cooperi* Bonap.—Cooper's Hawk; "Hen-Hawk".

*Description:* L. 15; W. 10; T. 8. Female larger. Above, uniform grayish blue; top of head black; tail rounded and



crossed with three or four black bands; underparts white with sides spotted with brown. Sexes similar. Nest: in trees 30—50 ft. up, often old squirrels' nests. Eggs: 2—6, greenish-white spotted with brown.

*Season:* Permanent resident.



COOPER'S HAWK

A deadly enemy to poultry, game birds and song-birds. Deserves no mercy.

*Records:* Lexington (H. Garman); Nelson Co. incubating Apr. 22, 1918 (B. J. Blincoe); Bowling Green (G. Wilson); Ballard Co. (G. Wilson); Hart Co.; Daviess Co.; Clay Co.; Mercer Co. (W. D. F.).

*Remarks:*

One of the wickedest hawks in Kentucky. Feeds almost entirely on poultry and song-birds. Should be shot at sight.

**91. (334) *Astur atricapillus* Wils.—Goshawk.**

*Description:* L. 22; W. 13; T. 10. Female larger. Head black; white line over eye; upperparts slate blue; tail slate in middle and reddish at edges with white tip; entire undersurface regularly barred with zig-zag lines of gray and white.

*Season:* Rare visitant.

*Records:* Kentucky (A. Butler); Southern Kentucky (Audubon); Bardstown, Dec. 1, 1917 (B. J. Blincoe); Bowling Green, Feb. 2, 1918 (G. Wilson).

*Remarks:*

A fine, large, valuable hawk which feeds almost entirely upon rats and mice. Should be protected.

**92. (337) *Buteo borealis* Gmal.—Red-tailed Hawk.**

*Description:* L. 20; W. 15; T. 10. Female larger. Upperparts brown or reddish-brown; wings reddish with four outer primaries notched; tail red with narrow black band near end and with white tip; underparts white streaked with brown. Nest: in high trees. Eggs: 2—4, dirty white.

*Season:* Permanent resident.

*Records:* Bowling Green (G. Wilson); Nelson Co. nesting (B. J. Blincoe); Lexington, Jan. 24, 1905 (M. Didlake); Ballard Co. Aug. 31, 1918 (G. Wilson); Harlan Co. Apr. 27, 1923 (W. D. F.).

*Remarks:*

A beautiful, beneficial bird which feeds almost exclusively on rats, mice and reptiles. It is sometimes mistakenly called "chicken hawk" or "hen-hawk" which is most unfortunate as it seldom if ever attacks poultry. It should be encouraged and protected.

93. (339) *Buteo lineatus* Gmel.—Red-shouldered Hawk.

*Description:* L. 18; W. 12; T. 8. Female larger. Head and neck reddish with cross marks of white; upperparts brown, mottled with reddish, buff and white; lesser wing coverts red, forming a conspicuous "shoulder" patch; tail brown with four or five white cross-bands and a white tip; underparts reddish with many white spots.



FIG. 67  
RED SHOULDERED HAWK

A very beneficial bird. Ninety per cent of its food consists of rodents and insects. Should be protected.

Nest in trees, 40—60 feet up, of twigs lined with grass.  
Eggs: 2—5, variable, usually white marked with brown.

*Season:* Permanent resident.

*Records:* Fayette Co.; Woodford Co.; Bourbon Co.; Anderson Co.; Jessamine Co.; Clark Co.; Bell Co.; Harlan Co.; Graves Co.; Jefferson Co.; Daviess Co.; Hart Co. (W.

D. F.); Nelson Co. (B. J. Blincoe); Lexington, Oct. 28, 1920 (W. Sams); Bowling Green (G. Wilson); Ballard Co. (G. Wilson); Harlan Co., Apr. 27, 1923 (W. D. F.).

*Remarks:*

One of the commonest hawks in Kentucky. An extremely valuable bird. Fully 90% of its food consists of rodents and insects, the remainder being chiefly reptiles, batracians, spiders, worms and crawfish. It seldom attacks poultry or other birds and yet is commonly called a "chicken-hawk" by ignorant persons and is often shot at sight. Butler says: "These valuable birds deserve and should receive the protection of everyone, particularly the farmer."

94. (343) *Buteo platypterus* Vieill.—Broad-winged Hawk.

*Description:* L. 14; W. 10; T. 6.5, female larger. Above, brownish black; breast reddish with white spots; belly white; tail brownish-black with two or three cross-bands of gray. Nest in trees 20—50 feet up, of sticks lined with leaves and bark. Eggs: 2—4, yellowish white, spotted with brown.

*Season:* Permanent resident; not common.

*Records:* Bowling Green, Sept 7—Mar. 29 (G. Wilson).

*Remarks:*

A friendly and somewhat lazy bird which feeds on insects and mice. It is especially fond of grasshoppers, caterpillars and beetles and is a good friend of the farmer. Should be protected.

95. (349) *Aquila chrysaetos* Linn. Golden Eagle.

*Description:* L. 35; W. 24 (expanse of 6—7 ft.); T. 15, female larger. Back of head buff; upperparts golden brown; base of tail with broken grayish bars; legs densely feathered down to the base of the toes

*Season:* Visitant and occasional resident.

*Records:* Lexington, 1920 (W. D. F.); Pulaski Co. (W. C. Wilson); Marion Co. (H. J. Childress); Bowling Green, Apr., 1919 (G. Wilson); Knott Co. (A. Campbell); Grayson Co. (R. O. Meredith); Elliott Co. (H. H. Mayse); Clay Co. rare (L. A. Clark); Casey Co. (W. B.

Moser); Bath Co. (J. Mayze); Casey, Oct. 19, 1921 (G. B. Holman); Lawrenceburg, Jan. 13, 1921 (W. P. Blackburn).

*Remarks:*

A noble American bird, now becoming very scarce. We should be proud to have these eagles in the State but they are



FIG. 68 *Photo by W. R. Gibson*  
DOMAIN OF THE GOLDEN EAGLE  
Cumberland Gap through Pine Mountain

usually shot whenever seen by some misguided individual who desires to see his name in the village newspaper as a hero who killed a bird "with a wing-spread of seven feet". It is a shame that we have no law to protect the few golden eagles which are left in the State. Mr. C. L. Hill reports that three were shot in Nelson County in the fall of 1921.

**96. (352) *Haliaeetus leucocephalus* Linn.—Bald Eagle.**

*Description:* L. 30; W. 20; T. 11, female larger. Head and neck white; beak yellow; upperparts reddish; tail white; underparts reddish brown; lower third of leg naked.

*Season:* Regular visitant and not uncommon resident.

*Records:* Paducah, Feb., 1922 (T. Gholson; S. P. Hughes);

Eardstown, Jan., 1922 (P. L. Perryman); Nelson Co. (B. J. Blincoe); Lexington, Jan. 19, 1921 (W. D. F.); Ballard Co. (N. Mansfield; W. A. Anderson); Carlisle Co. (B. A. Hensley); Crittendon Co. (J. R. Spenser); Fulton Co. (D. Pierson); Hopkins Co. (M. M. Gordon); Livingston Co. (J. D. Steele).

*Remarks:*

This eagle is the emblem of the United States but gets little respect from the hunter who apparently can not resist the desire to shoot a bird of this size. It is, in fact, not a very admirable bird, being somewhat of a coward, and a notorious robber of fish-hawks. The golden eagle is far more worthy of choice as an emblem for independence and bravery. Mr. E. A. Whalen of Barlow reports that these eagles rear their young at the head of Clear and Axe Lakes in Ballard County, and Mr. W. A. Anderson states that he has found their nests at Prairie Lake in the same region.

**97. (356) *Falco peregrinus anatum* Bonap.—Duck Hawk.**

*Description:* L. 16; W. 12; T. 6, female larger. Top of head black; back and rump dark bluish-slate; tail slate, barred with black and tipped with white; underparts dirty white, spotted with black. Sexes similar.

*Season:* Visitant.

*Records:* Lexington (R. H. Dean); Woodburn, Springs Station, Dec. 21, 1900 (Mrs. L. Brodhead).

*Remarks:*

Found only near water. The Duck Hawk may breed in this State as it does in Indiana but we have no records to prove this

**98. (357) *Falco columbarius* Linn.—Pigeon Hawk.**

*Description:* L. 12; W. 8; T. 5. Upperparts bluish gray; a reddish line around neck; wings marked with white; tail dusky with five gray cross-bands and tip white; underparts white with brownish markings.

*Season:* Migrant.

*Records:* Bowling Green (Miss S. F. Price).



*Remarks:*

A true falcon which catches its prey on the wing. Is very fond of English sparrows as food and deserves protection for this if for no other reason. A daring and pugnacious little bird.

**99. (360) *Falco sparverius* Linn.—Sparrow Hawk.**

*Description:* L. 10; W. 7; T. 5. Upperparts reddish-brown barred with black; tail reddish with a black band across the end; two longitudinal black marks on side of head; underparts creamy with large brown spots. Sexes similar but female not so well marked. Nest: a hole in a tree, often a deserted woodpecker's nest. Eggs: 3—7, creamy white, marked with brown.

*Season:* Common permanent resident.

*Records:* Lexington, every month in 1920 (W. D. F.); Nelson Co., breeds, (B. J. Blincoe); Bowling Green (G. Wilson); Ballard Co. (G. Wilson); Fayette Co. Apr. 23, 1916; Apr. 22, 1917; Apr. 14, 1918; Mar. 30, 1919 (C. K. Morrell); Feb. 25, 1903; Jan. 12, 1905; Feb. 19, 1909; Apr. 22, 1910; Feb. 9, 1911; Feb. 23, 1913; Jan. 2, 1914 (M. Didlake); Apr. 18, 1920 (D. J. Healy); Harlan Co. Apr. 27, 1923 (W. D. F.); Bourbon Co. Mar. 29, 1923 (V. Dodge).

*Remarks:*

Feeds chiefly on grasshoppers and English sparrows. A specimen reared in captivity successfully killed and devoured a good-sized garter snake in our laboratory. A beneficial hawk and a brave and fearless little fighter.

**100. (364) *Pandion haliaetus carolinensis* Gmel.—Osprey; Fish Hawk.**

*Description:* L. 23; W. 18; T. 8. Feathers compact; third toe versatile; soles of feet with sharp spicules; head whitish; upperparts dark brown with white markings; tail gray, crossed with six or seven narrow dusky bands and tipped with white; breast white with brown blotches; belly white. Sexes similar.

*Season:* Common visitant.

*Records:* Kentucky (H. Garman); Bardstown, Apr., 1882 (R. Wickliffe); Nelson Co. (B. J. Blincoe); Henderson Co. (W. D. F.).

*Remarks:*

Feeds entirely on fish for which it often dives far under water.

**101. (365) *Aluco pratincola* Bomap.—Barn Owl; "Monkey-faced Owl".**

*Description:* L. 18; W. 13; T. 6. Facial disk triangular; middle claw with toothed edge; middle and inner claws equal in length; above, yellow, mottled with ashy and speckled with black; below white or tawny with black spots.

*Season:* Common visitant.

*Records:* Fayette Co. (L. Railey; E. Fox); Bullitt Co. (C. W. Beckham); Nelson Co. (B. J. Blincoe); Lexington, Apr. 23, 1903; May 31, 1904; May 23, 1906; Jan. 28, 1907 (M. Didlake); May 3, 1920 (W. D. F.); Bowling Green, Aug. 1921 (G. Wilson); Harrodsburg, Sept., 1921 (J. P. Meador).

*Remarks:*

This owl is quite common but owing to its secretive habits it is seldom seen. It is often mentioned in the newspapers as the "monkey faced owl" and is written up as though it were a strange and wonderful bird. It lives almost entirely on mice and is most valuable around the barns which it usually inhabits.

**102. (366) *Asio wilsonianus* Less.—Long-eared Owl.**

*Description:* L. 14; W. 11; T. 6. Conspicuous ear tufts of eight to ten feathers an inch or more in length; upperparts brownish-black, mottled with gray; tail with six or eight brown cross-bars; underparts white with broad brown stripes; eyes yellow; legs and feet tawny. Sexes alike. Nest: usually the old nest of some other bird. Eggs: 3—6, pure white.

*Season:* Permanent resident.

*Records:* Lexington (H. Garman); "Barrens" (Audubon); Nelson Co. (B. J. Blincoe); Bowling Green, Mar. 14,

Apr. 13, 1918 (G. Wilson); Jefferson Co.; Hart Co.; Bell Co. (W. D. F.).

*Remarks:*

A woodland bird, very retiring and never seen in the open. Hunts only at night and so is seldom noticed and is therefore generally regarded as rare. Feeds almost entirely on mice. A friend of the farmer and should be protected.

**103. (367) *Asio flammeus* Pont.—Short-eared Owl.**

*Description:* L. 15; W. 12; T. 6. Ear-tufts very short. Plumage variable, ranging from reddish to yellowish white with large dark brown stripes; tail with buff and brown bands of almost equal width; underparts whitish, the breast broadly and the belly narrowly streaked with dark brown; eyes yellow. Sexes similar. Nest: on ground in marshy places. Egg: 4—7, white.

*Season:* Permanent resident.

*Records:* Nelson Co. (B. J. Blincoe); Ballard Co. Aug. 30, 1917 (G. Wilson); Lexington (H. Garman)

*Remarks:*

A bird of the open country. Seldom seen in deep woods. Often hunts by day. Feeds chiefly on mice. Is a very beneficial bird.

**104. (368) *Strix varia* Bart.—Barred Owl; "Hoot-Owl."**

*Description:* L. 20; W. 13; T. 9. No ear-tufts. Upperparts grayish-brown, each feather with two or three light bars; tail brown with six or eight lighter bands; facial disk gray; underparts white, the breast with cross-bars and the belly with longitudinal brown streaks; eyes brown; beak yellow. Nest: usually in hollow tree. Eggs: 2—4, pure white.

*Season:* Permanent resident

*Records:* Van Lear, Nov. 14, 1921 (F. P. Bell); Anderson Co.; Woodford Co.; Jessamine Co. (W. D. F.); Nelson Co. Mar. 6, 1915; Nov. 22, 1919 (B. J. Blincoe); Bowling Green (G. Wilson); Ballard Co. (G. Wilson).

*Remarks:*

Recognized by its large size, the absence of horns or ears

(the "muley owl"), the distinct barred appearance, the brown eyes, and the well-known loud sonorous call of "Who, who, who, who-who, too-who-who!" Sometimes this call is varied by a weird shriek and sometimes, especially when two or more birds are together, their cries suggest maniacal, mirthless laughter. Ridgeway says:<sup>\*</sup>

"When several get together their nocturnal concerts are very entertaining. One appears to tell some joke or do something funny, at which the rest set up a hearty though demoniacal he, he, he, he, hi, hi, hi, hi, ha, ha, ha, ha, ha, and the uncanny company is boisterously hilarious for a few moments, when the solitude of the night again reigns supreme."

We once heard a pair on opposite sides of the Kentucky River near Idlewild laugh almost humanly at each other for fully five minutes about midnight one night while we floated past in a canoe.

By some, their call is supposed to sound like the words: "Who-cooks-for-you-all?"

They feed on mice, frogs, lizards and insects and rarely on other birds. They are not harmful and should be protected.

**105. (373) *Otus asio* Linn.—Screech Owl.**

*Description:* L. 9; W. 6; T. 3; variable. Size small; ear-tufts prominent and about an inch long; toes feathered on upper surface; plumage presenting two entirely different phases, without regard to age, sex, or season of the year—one phase reddish and the other gray—both about equally common. Nest: in hollow trees or in buildings. Eggs: 4—7, white.

*Season:* Abundant permanent resident.

*Records:* Fayette Co., abundant; Woodford Co.; Anderson Co.; Hart Co.; Jefferson Co.; Daviess Co. (W. D. F.); Nelson Co. (B. J. Blincoe); Lexington, Oct. 29, 1904; Apr. 25, 1909; (M. Didlake); Mar. 23, 1920 (W. Sams); Torment, Apr. 22, 1920 (W. R. Campbell); Bowling Green, (G. Wilson); Ballard Co. (G. Wilson).

<sup>\*</sup>Ridgeway, Robert. Birds of Illinois, I. p. 416.

*Remarks:*

The commonest owl in Kentucky. Well known on account of its weird, wailing tremulous cry which is most melancholy. Screech owls hunt only at night and are practically blind in the



Fig 69 Photo by James Speed

THE LIGHT HURTS HIS EYES

The friendly and beneficial little screech owl

daytime. They feed on mice, insects and often on English sparrows and are entirely beneficial. They are friendly little owls and are often found in towns and cities.

106. (375) *Bubo virginianus* Gmel.—Great Horned Owl.

*Description:* L. 22; W. 15; T. 9. Large and heavy; ear-tufts very large, sometimes two inches in length; upperparts mottled with various shades of brown, reddish, buff and black; white patch on throat; underparts buff, barred with black; legs and feet feathered; eyes yellow. Nest: deserted crow or squirrel nest or hollow tree. Eggs: 2—3, white.

*Season:* Permanent resident; becoming scarce

*Records:* By counties—Ballard (B. Berry; G. Wilson); Bath (C. F. Martin); Bell (R. H. Shipp); Boone (W. D. Sutton); Bracken (P. J. Arnold); Breathitt (G. W. Thompson); Butler (F. H. Spickard); Campbell (H. F. Link); Carlisle (B. A. Hensley); Carroll (M. L. Downes); Clay (L. A. Clark); Crittenden (J. R. Spenser); Cumberland (C. S. Payne); Daviess (H. S. Berry); Elliott (H. H. Mayse); Gallatin (W. D. Jackson); Graves (B. H. Mitchell); Grayson (J. S. Hughes); Harlan (R. T. Harrison); Hart (J. S. Pullen); Henderson (F. Street); Henry (K. Biekers); Hickman (L. Jackson); Hopkins (M. M. Gordon); Kenton (C. A. Wicklund); Knott (A. Campbell); Lewis (R. O. Bate); Lincoln (C. B. Elston); Livingston (J. D. Clopton); McCracken (J. R. Bird); McLean (R. H. Ford); Marion (H. J. Childress); Marshall (G. O. Basham); Martin (E. Cassady); Nelson (C. L. Hill); June, 1920 (B. J. Blincoe); Ohio (F. P. Bell); Owsley (P. M. Frye); Pike (W. M. Wesley); Pulaski (W. C. Wilson); Taylor (J. L. Müller); Union (A. M. Allen); Warren (G. Wilson); Webster (L. E. Cutler).

*Remarks:*

A powerful bird; we have known a specimen to force its claws entirely through the wrist of a man who attempted to take it from a trap. Chapman calls it a "tiger among birds". It has a very loud deep-toned "who—who" and sometimes a loud, piercing scream. We once had a specimen in a cage in the laboratory and one night we were working late in the room and had forgotten its presence. Everything was perfectly quiet and we were absorbed with our task when suddenly, without warning, the bird behind us gave its blood-curdling shriek. The effect may be more easily imagined than described.

The Great Horned Owl is still well distributed throughout Kentucky as is evidenced by our records but the number of individuals is very small, generally only one or two seen each year in a locality.

This owl undoubtedly eats poultry when occasion offers, though its favorite food is rabbits. Our laboratory specimen was very fond of rats. Its strength is so great that it has no difficulty in killing any of the domestic fowls. It is, however, such a wonderful bird, and is becoming so scarce, that it seems



unnecessary to destroy the few remaining in the State. It is usually found in dense woods.

**107. (376) *Nyctea nyctea* Linn.—Snowy Owl.**

*Description:* L. 25; W. 17; T. 9.5. Ear-tufts small; entire plumage pure white.

*Season:* Rare winter visitant.

*Records:* Kentucky (H. Garman); Bardstown (Audubon); Nelson Co. (E. E. McKay and B. J. Blincoe).

*Remarks:*

Our largest owl. Visits the State during severe winters. Hunts by day and is therefore very conspicuous.

**ORDER PSITTACI—PARROTS, MACAWS AND PAROQUETS**

*Characters:* Two toes in front and two behind; beak strongly hooked and with a fleshy base; lower mandible scoop-shaped; colors generally conspicuous.

**108. (382) *Conuropsis carolinensis* Linn.—Carolina Paroquet.**

*Description:* L. 12; W. 7; T. 6. Forehead, lores and cheeks rich orange-red; rest of head bright yellow; shoulder orange; tips of primaries blue; rest of plumage bright grass green; beak creamy white; eyes brown.

*Season:* Probably entirely exterminated in Kentucky.

*Records:* Ohio River 1842 (Audubon); Big Bone Lick 1810 (Wilson).

*Remarks:*

Formerly extremely abundant in Kentucky and bred as far north as Indianapolis. Their brilliant colors were often noted by the early settlers. They are now practically extinct, having been ruthlessly slaughtered, largely because few hunters could resist the desire to exhibit "the strange, beautiful bird" they had shot.

**ORDER COCCYGES—CUCKOOS AND KINGFISHERS.**

*Characters:* Four toes, the middle and outer ones joined for half their lengths, or two in front and two behind; beak strong and without fleshy bases.

**109. (387) *Coccyzus americanus* Linn.—Yellow-billed Cuckoo; "Rain-Crow".**

*Description:* L. 12.5; W. 5.5; T. 6. Upperparts olive-gray; underparts white; beak black with lower mandible yellow except tip; wings reddish-brown with tips of feathers darker; central feathers of tail gray, outer tail feathers black with broad white tips. Nest: rough platform of small twigs in bushes or trees 5—15 ft. up. Eggs: 3—5, greenish-blue.

*Season:* Common summer resident.



Fig. 10  
AN ENEMY TO HAIRY CATERPILLARS  
The Yellow-billed Cuckoo or "Rain Crow," one of the most valuable birds in Kentucky

*Records:* Nelson Co. earliest arr. Apr. 29, 1915; latest dep. Oct. 6, 1912; incubation July 7, 1916 (B. J. Blincoe); Lexington, Mar. 15, 1922 (L. Rice); May 2, 1916; May 4, 1919 (C. K. Morrell); June 2, 1903; May 14, 1904; May 12, 1905; May 27, 1906; May 18, 1908; May 29, 1909; May 22, 1910; May 2, 1911; May 18, 1912; May 18, 1913; May 18, 1914 (M. Didlake); May 3, 1919 (D. J. Healy); May 2, 1920 (W. Sams); May 10, 1918 (W. R. Campbell); Versailles (L. Giovanolli); Bowling Green, Apr. 4—Oct. 6, (G. Wilson); Ballard Co. (G. Wilson); Tyrone, June, 15; Munfordville, Aug. 2 (W. D. F.).

*Remarks:*

One of the most valuable birds in Kentucky. Feeds largely on hairy caterpillars which most other birds dislike and hence is a most valuable bird in the orchard.

The writer observed at Tyrone on June 15, 1921, a pair of these birds eat all of the tent caterpillars in a large nest in

less than three minutes. The nest had been previously observed full of caterpillars. After eating the caterpillars, the birds destroyed the nest, apparently for the pure joy of tearing it to pieces, although they may have been searching for a few left-over worms.

21 stomachs of these birds were found to contain 355 caterpillars, 18 beetles, 23 grasshoppers, 31 sawflies, 14 bugs, 6 flies, and 12 spiders; one stomach contained 217 fall web-worms (Beal. Farmers Bull. No. 54. U. S. Dept. of Agr. p. 6.).

The bird gets its popular name of "rain-crow" from the superstition that its call is most frequently heard just before a rain.

**110. (388) *Coccyzus erythrophthalmus* Wils.—Black-billed Cuckoo.**

*Description:* L. 12; W. 5.5; T. 6.5. Above, olive-gray with bronzy reflections; wings grayish brown; tail brown, narrowly tipped with white; beak entirely black.

*Season:* Migrant; in some parts of the State a rare summer resident.

*Records:* Lexington, May 20, 1909 (M. Didlake); May 1, 1921 (W. D. F.); Nelson Co. (C. W. Beckham); Bowling Green, Apr. 24—May 18; Sept. 18—27 (G. Wilson).

*Remarks:*

Very much like the preceding in appearance and habits but distinguished by the black beak and white-tipped tail.

**111. (390) *Ceryle alcyon* Linn.—Belted Kingfisher.**

*Description:* L. 13; W. 8; T. 4. Male: head with a crest; upperparts blue; white collar, wide on throat and narrow behind; wings marked with white; sides bluish-gray. Female: sides reddish; a reddish line across belly. Nest: a burrow in a steep bank of a stream. Eggs: 5—8, pure white.

*Season:* Common summer resident.

*Records:* Fayette Co. Apr.—Sept. (W. D. F.); Nelson Co. B. J. Blincoe); Lexington, Apr. 27, 1918 (C. K. Morrell); Aug. 21, 1904; May 3, 1913; (M. Didlake); July 3, 1920 (W. Sams); Bowling Green, erratic, (G. Wilson); Bal-

lard Co. (G. Wilson); Harlan Co. Apr. 27, 1923 (V. Dodge and W. D. F.).

*Remarks:*

An ardent fisherman, perching quietly on an overhanging limb while waiting for its prey. When disturbed the Kingfisher utters a loud, discordant, rattling cry which is very easily recognized

ORDER PICI.—THE WOODPECKERS.

*Characters:* Climbing birds with two toes in front and two behind; colors usually black and white with some red on head; tail feathers stiff and pointed; beak stout and pointed.

**112. (392) *Campephilus principalis* Linn.—Ivory-billed Woodpecker.**

*Description:* L. 20; W. 10; T. 7. Large red crest on head; beak ivory white; a white line beginning under each eye, continuing down neck and uniting on back; upperparts glossy black; primaries white; underparts black. Sexes similar but female has black crest.

*Season:* Now entirely extinct in this State.

*Records:* Henderson (Audubon).

*Remarks:*

A magnificent bird of the dense swamp forests. The largest of the woodpeckers. Has been practically wiped out except in the most inaccessible of the southern cypress swamps. Formerly nested in Kentucky.

**113. (393) *Dryobates villosus* Linn.—Hairy Woodpecker.**

*Description:* L. 9; W. 5; T. 3.5. Male: above, black; white line down middle of back; white strip on each side of head; red band across back of neck; wings with white spots; tail black in middle but with outer feathers white. Female: no red on head. Nest: hole in dead tree. Eggs: 3—5, white.

*Season:* Permanent resident.

*Records:* Nelson Co. resident, (B. J. Blincoe); Lexington, Mar. 24, 1916; Apr. 15, 1917 (C. K. Morrell); Apr. 6, 1906;

May 5, 1907; Apr. 25, 1912; Jan. 5, 1913 (M. Didlake); May 4, 1919; Apr. 25, 1920 (D. J. Healy); Jan. 10, 1920 (W. Sams); Mar. 15, 1922 (W. D. F.); Bowling Green (G. Wilson); Ballard Co. (G. Wilson); Harlan Co.; Bell Co.; Woodford Co.; Anderson Co.; Jessamine Co. (W. D. F.); Bourbon Co. Mar. 29, 1923 (V. Dodge and W. D. F.).

*Remarks:*

Feeds largely on the larvae of insects which bore under the bark of trees and for which it drills with its powerful beak. Its tongue is stiff and barbed for spearing and pulling out these larvae. A very valuable bird.



Photo by James Speed  
Fig. 71

ON THE LOOKOUT FOR GRUBS  
The Downy Woodpecker, one of the  
smallest of his family but very in-  
dustrious

114. (394) *Dryobates pubescens pubescens* Linn.—Southern Downy Woodpecker.

*Description:* L. 6; W. 3.5; T. 2.3. Male: upperparts black with a white stripe down back; red band on nape; wings spotted with white; middle of tail black but with outer feathers barred with black and white; a white stripe above the eye and another below the eye; underparts

brownish. Female: no red on nape. Nest: hole in fence, stump or low tree. Eggs: 3—6, shining white.

*Season:* Permanent resident.

*Records:* Nelson Co. (B. J. Blincoe); Fayette Co., every month in 1919 (W. D. F.); all winter, 1918 and 1919 (C. K. Morrell); Bowling Green (G. Wilson); Ballard Co. (G. Wilson).

*Remarks:*

The smallest of our woodpeckers. Feeds on both animal and vegetable matter, the chief items being ants, beetles and their larvae, caterpillars, grasshoppers, and weed seeds. They are very beneficial.

115. (394c) *Dryobates pubescens mediannus* Swains.—Downy Woodpecker.

*Description:* L. 7; W. 4; T. 2.5. Very similar to the preceding but larger; the colors are brighter, there is more white in the plumage and the underparts are entirely white instead of brownish.

*Season:* Visitant.

*Records:* Kentucky (Kentucky Audubon Society); Woodford Co. Apr. 14, 1912 (V. K. Dodge; M. Didlake).

*Remarks:* Food and habits the same as the preceding.

116. (402) *Sphyrapicus varius* Linn.—Yellow-bellied Sapsucker.

*Description:* L. 8; W. 5; T. 3. Male: crown, forehead, chin and throat all bright crimson; upperparts black with yellowish-white bars; wings black and white, their coverts white; tail black with white cross-bars; breast black; belly yellow. Female: chin and throat white; very little red on head.

*Season:* Winter resident

*Records:* Nelson Co. Apr. 1—9, 1917; Apr. 14, 1918; Mar. 21—Apr. 27, 1920; Mar. 24, Apr. 11, 1921; Sept. 23—Oct. 17, 1919; Oct. 3, 1920; Oct. 14, 1912; Sept. 21—Oct. 1, 1916 (B. J. Blincoe); Lexington, Mar. 25, 1917; Apr. 14, 1918; Mar. 30, 1919 (C. K. Morrell); Mar., 1903, 1906 (M. Didlake); June 8, 1919 (D. J. Healy); Mar. 27,



1920 (W. Sams); Mar. 13, 1922 (W. D. F.); Bowling Green, Sept. 23—May 17 (G. Wilson); Ballard Co. Aug. 29, 1917 (G. Wilson); Daviess Co.; Jefferson Co. (W. D. F.).

*Remarks:*

This bird gets its popular name from the fact that it drills large holes in circles or spirals around the trunks and larger limbs of trees in order to get the sap, the inner bark, and the insect larvae on which it feeds. Sometimes these holes are so numerous and so close together that they seriously injure the timber. This is the only one of the woodpeckers which is not entirely beneficial.

**117. (405) *Phloeotomus pileatus* Linn.—Pileated Woodpecker.**

*Description:* L. 18; W. 9; T. 7. Prominent bright red crest; red stripe on head extending backward and downward from base of lower mandible; white stripe from eye and one from nostril; sides of neck white; upperparts black; tail black; throat white; underparts black. Female: front of head black; no red at base of lower mandible. Nest: hole in tree, high up. Eggs: 3—5, glossy white.

*Season:* Rare permanent resident.

*Records:* Pulaski Co. (W. D. F.); Nelson Co. Feb. 8, 1920 (B. J. Blincoe); Bowling Green (G. Wilson); Ballard Co. fairly common (G. Wilson).

*Remarks:*

The largest woodpecker now found in Kentucky. A shy, wary bird whose home is in the deep woods. Rapidly being exterminated. Very beneficial.

**118. (406) *Melanerpes erythrocephalus* Linn.—Red-headed Woodpecker.**

*Description:* L. 9.5; W. 5.5; T. 3.5. Head, neck and breast bright red; back and tail glossy blue black; rump, ends of secondaries and all underparts show-white; bases of secondaries and primaries black. Sexes alike. Nest: hole in a tree or pole. Eggs: 4—8, white.

*Season:* Common summer resident; often winters.

*Records:* Fayette Co. Jan. 1, 1894 (V. K. Dodge); Nelson Co.

wintered 1912—1913; earliest arr. Apr. 16, 1920; latest dep. Oct. 2, 1915 (B. J. Blincoe); Lexington earliest arr. Apr. 14, 1919 (C. K. Morrell); (Apr. 14, 1912 (M. Didlake); Bowling Green (G. Wilson); Ballard Co. (G. Wilson); Bourbon Co. a few wintered in 1921-1922 (V. K. Dodge).

*Remarks:*

The "red, white and blue" bird. Probably the commonest woodpecker in Kentucky. Feeds chiefly on insects but eats all small cultivated fruits in their season. On the whole is very beneficial.

**119. (409) *Centurus carolinus* Linn.—Red-bellied Woodpecker.**

*Description:* L. 10; W. 5; T. 4. Male: top of head and back of neck bright red; back and wings regularly barred with black and white; rump white; tail irregularly white and black mottled; underparts white with the middle of belly reddish. Female: top of head gray. Nest: hole in tree. Eggs: 3—5, white.

*Season:* Permanent resident.

*Records:* Woodford Co. (W. D. F.); Nelson Co. (B. J. Blincoe); Lexington, Feb. 7, 1919; May 7, 1911; Apr. 14, 1912 (M. Didlake); Mar. 27, 1920 (W. Sams); Bowling Green (G. Wilson); Bourbon Co. Mar. 29, 1923 (V. Dodge and W. D. F.).

*Remarks:*

Recognized by its "checker-board" back. In some parts of the State it is as common as the red-head, which it resembles in general food habits.

**120. (412) *Colaptes auratus auratus* Linn.—Flicker; "Yellow-Hammer"; "High-holer".**

*Description:* L. 11; W. 5.5; T. 3.5. Male: head and nape gray; bright red patch on back of neck; black streak on each side of throat; back brownish-gray, regularly and broadly barred with black; rump white; tail black; under-surfaces of wings and tail bright golden yellow; underparts wine-colored; a large black crescent on breast, and black spots on belly. Female: no black marks on throat. Nest: hole in tree. Eggs: 5—9, white.

*Season:* Permanent resident.

*Records:* From almost every county in the State. Lexington, every month in 1921 (W. D. F.); wintered 1919 (C. K. Morrell); Bowling Green (G. Wilson); Nelson Co. (B. J. Blincoe); Bourbon Co. Mar. 29, 1923 (V. Dodge and W. D. F.); Harlan Co. Apr. 27, 1923 (V. Dodge and W. D. F.).

*Remarks:*

Easily recognized by the bright yellow undersurface of the wings and tail which is prominently displayed in flight. Not at all timid and often found in cities. Generally stays close to the ground. The flicker has a slightly curved beak and cannot bore into wood as easily as other woodpeckers. It feeds chiefly on ground-inhabiting insects but is not at all limited in its diet and takes considerable vegetable food.

**121. (412a) Colaptes auratus luteus Bangs.—Northern Flicker.**

*Description:* L. 12; W. 6; T. 4. Very similar to preceding but larger, lighter in general color, and with the black markings narrower.

*Season:* Permanent resident.

*Records:* Ballard Co. (G. Wilson).

*Remarks:*

Same as preceding in food and general habits. Apparently very limited as to localities; we have only the Ballard County reference.

**ORDER MACROCHIRES.—THE GOATSUCKERS.**

*Characters:* A poorly defined order. Usually with primaries very long and with very large mouths surrounded by bristles; or, with very long pointed beaks and brilliant colors.

**122. (416) Antrostomus carolinensis Gmel.—Chuck-Will's-Widow.**

*Description:* L. 12; W. 8.5; T. 6. Bristles at base of mouth branched. Male: above, mottled gray, brown and black; primaries black with reddish bars; tail mottled black and

buff with the ends of outer tail-feathers white; underparts gray, mottled with dusky. Female: no white on outer tail-feathers. Nest: none; lays its eggs anywhere on the ground. Eggs: 2, white, blotched with gray or brown.

*Season:* Rare summer resident.

*Records:* Nelson Co. June 27, 1915; May 6, 1917 (B. J. Blincoe); Bowling Green Apr. 25—Aug. 17 (G. Wilson); Ballard Co. July 30, 1917 (G. Wilson).

*Remarks:*

Has an enormous wide gaping mouth and has been known to swallow small birds as well as the usual insect prey.

**123. (417) Antrostomus vociferus Wils.—Whip-poor-will.**

*Description:* L. 10; W. 7; T. 5. Bristles at base of mouth not branched. Male: above, mottled gray and brown and streaked with black; primaries dusky, spotted with reddish; tail black with the ends of outer tail-feathers white; below, mottled as above, darker in front, lighter behind; a conspicuous white band across the throat. Female: no white on tail; throat-band buff. Nest: none; lays its eggs anywhere on the ground. Eggs: two, dull white.

*Season:* Summer resident.

*Records:* Bowling Green, Apr. 6—July 25 (G. Wilson); Nelson Co. earliest arr. Apr. 17, 1917; last call heard July 22, 1919 (B. J. Blincoe); Lexington, Apr. 29, 1916 (C. K. Morrell); Apr. 24, 1904; Apr. 22, 1905; Apr. 25, 1909; May 9, 1911 (M. Didlake); Torrent Apr. 22, 1920 (W. R. Campbell); Harlan Co. Apr. 27, 1923 (V. Dodge and W. D. F.).

*Remarks:*

Spends the days in the deep woods, resting close to large branches where its remarkable protective coloration effectually conceals it. Comes out at dusk, flying low and almost noiselessly and catching large numbers of nocturnal insects. It is well known because of its call, which is heard after sun-down and before sun-rise and is very suggestive of its popular name. This call is repeated over and over again in a very monotonous fashion.

124. (420) *Chordeiles virginianus* Gmel.—Nighthawk; "Bull-bat".

*Description:* L. 10; W. 8; T. 4.5. Very similar to the preceding but has a much larger white V-shaped patch on the throat and a white band across the end of the tail. Nest: none; sometimes lays its eggs on bare rocks. Eggs: 2, creamy, marked with brown or black.

*Season:* Summer resident; very abundant.

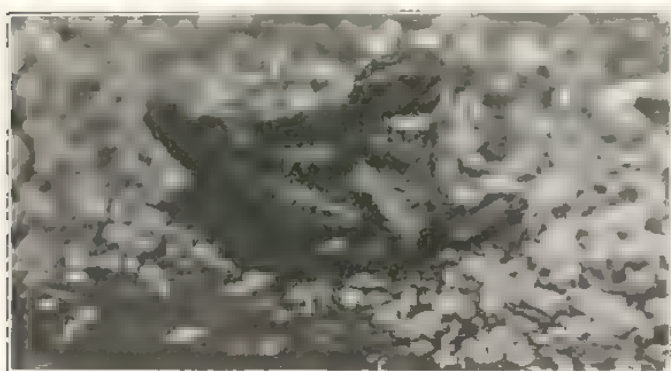


FIG. 72 Photo by W. R. Campbell

NIGHTHAWK ON EGGS

This bird builds no nest but lays its eggs anywhere—this one on a gravel roof.

*Records:* Lexington May—Sept. (W. D. F.); earliest arr. Apr. 24, 1917 (C. K. Morrell); Nelson Co. earliest arr. May 11, 1921; latest dep. Oct. 26, 1920 (B. J. Blincoe); Bowling Green, Apr. 17—Oct. 20 (G. Wilson); Ballard Co. (G. Wilson).

*Remarks:*

The common name is unfortunate. It is not a hawk and it often flies in the daytime. It is really a nocturnal bird, however, and feeds on night-flying insects which it catches on the wing. Its flight is bat-like and erratic. When at rest in the daytime it perches lengthwise on the branch and is very hard to locate.

125. (423) *Chaetura pelagica* Linn.—Chimney Swift.

*Description:* L. 5.3; W. 5; T. 2. Above, sooty-brown; wings black; a black spot in front of eye; chin and throat gray; breast sides, and belly light brown. Sexes alike. Shafts of tail-feathers extending beyond vanes. Nest: a half-nest of twigs glued together with saliva, in chimneys near the top. Eggs: 4—6, white.

*Season:* Abundant summer resident; occasional permanent resident

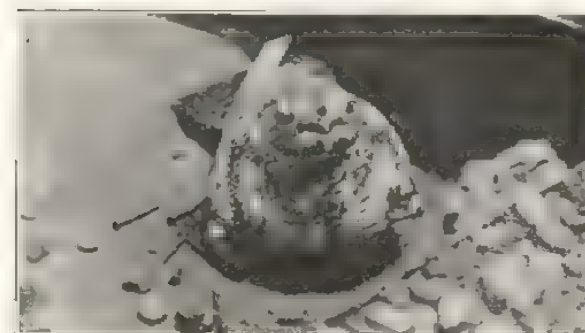


Photo by W. R. Campbell

FIG. 73

A BABY NIGHTHAWK

The same roof a little later

*Records:* Fayette Co. Apr.—Sept. (W. D. F.); Nelson Co. Apr. 12—Oct. 3, 1912; Apr. 8—Oct. 9, 1913; Apr. 1, 1914; Apr. 15—Oct. 5, 1915; Apr. 4—Oct. 4, 1916; Apr. 15—Oct. 14, 1917; Apr. 4, 1918; Oct. 15, 1919; Apr. 1, Oct. 10, 1920; Apr. 16, 1921 (B. J. Blincoe); Lexington, Apr.—Aug. (W. D. F.); earliest arr. Apr. 9, 1919 (C. K. Morrell); Bowling Green, Apr. 1—Oct. 16 (G. Wilson); Ballard Co. (G. Wilson); records from practically every county in the State.

*Remarks:*

A well named bird. It is very swift, being one of the fastest flyers for short distances in the bird world, and it frequents chimneys, probably an adaption from an earlier habit of nesting in hollow trees (Audubon reported finding 9,000 in a hollow sycamore).



Swifts feed entirely on insects which they catch on the wing and are thus very valuable birds. They sometimes cause annoyance by the noise they make in the chimneys and by the fledgling birds falling down the flues. Often a large number of birds will nest in one chimney. They are sometimes incorrectly called chimney "swallows".

**126. (428) *Archilochus colubris* Linn.—Ruby-throated Humming bird.**

*Description:* L. 3.5; W. 1.5; T. 1.2. Size very small; beak long and slender. Male; upperparts bright green; wings and tail purplish; throat bright ruby-red; sides greenish; breast and belly white; tail forked. Female: tail not forked, plumage with much black and white and no red. Nest: of lichens and vegetable down, covered with lichens—a beautiful and dainty structure. Eggs: 2, white.

*Season:* Common summer resident.

*Records:* Bowling Green, Apr. 22—Oct. 15 (G. Wilson); Nelson Co. Apr. 26, 1914; Sept. 25, 1915; Apr. 23—Sept. 7, 1916; May 6—Sept. 9, 1917; Apr. 26—Aug. 14, 1919; Apr. 27—Sept. 5, 1920; May 5, 1921, breeds (B. J. Blincoe); Lexington, May 11, 1919 (C. K. Morrell); May 15, 1904; May 7, 1905; Apr. 28, 1907; May 18, 1900; May 5, 1912; May 2, 1914 (M. Didlake); May 9, 1920 (D. J. Healy); Apr. 28, 1920 (W. Sams) Ballard Co. (G. Wilson); Woodford Co.; Bell Co.; Harlan Co. (W. D. F.); Lexington, May 10, 1923 (L. F. Metzger.)

*Remarks:*

The only humming bird east of the Mississippi River and too well known to need discussion. A fearless little bird which will attack even a hawk. Very friendly and with considerable curiosity which often leads them into dwellings. They sometimes congregate in large numbers.

**ORDER PASSERES.—PERCHING BIRDS.**

*Characters:* Four toes on the same level, three in front and one behind, the hind toe as long as the middle one and the hind claw longer than the middle claw; no webs; twelve feathers in tail.

**Family Tyrannidae.—The Flycatchers.**

*Characters:* Tarsus with hind edge rounded; wings longer than tail; first primary short, second to fourth long; beak slightly hooked at tip; stiff bristles around the mouth.

**127. (422) *Muscivora tyrannus* Linn.—Fork-tailed Flycatcher.**

*Description:* L. 8; W. 4.5; T. up to a foot long, forked 6—8 inches. Crown yellow; sides of head black; upperparts gray; below, white; tail black with outer feathers partly white; wings dusky, unmarked. Sexes alike.

*Season:* Accidental visitant.

*Records:* Henderson (Audubon).

*Remarks:*

A beautiful tropical American bird which on rare occasions comes to the United States. The only record from Kentucky is that of Audubon.

**128. (444) *Tyrannus tyrannus* Linn.—Kingbird; Bee Martin.**

*Description:* L. 8.5; W. 4.5; T. 3.5: Above, dusky; top of head black with a concealed reddish crest; tail black, tipped with white; wings dusky with whitish lines; underparts white. Sexes alike. Nest: in trees, 15—20 feet up, made of all kinds of material and very compact. Eggs: 3—4, white, spotted with brown or purplish.

*Season:* Abundant summer resident.

*Records:* Nelson Co. earliest arr. Apr. 18, 1917; latest dep. Aug. 29, 1913, breeds (B. J. Blincoe); Lexington, Apr.—Sept., breeds, (W. D. F.); earliest arr. Apr. 6, 1908 (M. Didlake); Bowling Green, Apr. 19—Sept. 19 (G. Wilson); Ballard Co. (G. Wilson); Woodford Co.; Anderson Co.; Jessamine Co. (W. D. F.).

*Remarks:*

Best known from its habit of perching in conspicuous places from which it darts to catch insects, often bees, on the wing and return to its lookout. It has been suggested that insects may actually be attracted by the red crest when erected and so come within reach of the bird.

129. (449) *Pitangus derbianus* Kauf.—Derby Flycatcher.

*Description:* L. 10.5; W. 5; T. 4. Upperparts, wings and tail olive-brown; wings tinged with chestnut; top and sides of head black with a white line over eye; crest erectile; under-parts and linings of wings lemon yellow; beak and feet black. Sexes alike.

*Season:* Very rare visitant.

*Records:* Woodford Co. Sept. 4, 1906 (Mrs. L. Brodhead).

*Remarks:*

We can find only two other records of this flycatcher occurring north of Mexico.

130. (452) *Myiarchus crinitus* Linn.—Crested Flycatcher.

*Description:* L. 9; W. 4; T. 4. Head brown and strongly crested; upperparts decidedly olive; wings dusky edged with reddish; inner vane of all but the two middle tail-feathers reddish; below, throat and breast gray; remainder of underparts yellow. Sexes alike. Nest: in hollow trees and stumps, almost always lined with shed snake-skins. Eggs: 4—8, creamy, with longitudinal streaks of brown.

*Season:* Common summer resident.

*Records:* Fayette Co. Apr.—July (W. D. F.); Nelson Co. earliest arr. Apr. 16, 1916; latest dep. Aug. 15, 1916; nest-building June 13, 1915; nest with eggs May 24, 1916 (B. J. Blincoe); Lexington earliest arr. Mar. 24, 1918 (D. J. Healy; C. K. Morrell); Bowling Green, Apr. 19—Sept. 19 (G. Wilson); Ballard Co. (G. Wilson).

*Remarks:*

A large, handsome and well-marked flycatcher, quite pugnacious and able to drive crows and woodpeckers away from its nest. It prefers dense woodlands where it often inhabits deserted woodpecker-holes. A very industrious insect-eater and a valuable bird. It has a shrill, harsh cry. John Burroughs calls this bird "the wild Irishman of the flycatchers" and states that in regions where snake-skins can not be found, the bird lines its nest with onion-skins and fish-scales.

131. (456) *Sayornis phoebe* Lath.—Phoebe.

*Description:* L. 7; W. 3.5; T. 3. Above, olive-gray; wings dusky with coverts and inner secondaries edged with white; tail dusky with outer tail-feathers lighter below; underparts sordid white in front, yellowish behind. Sexes alike. Nest: rough collection of mud, moss, grass and feathers under a cliff, bridge, roof, culvert or in the mouth of a cave. Eggs: 3—8, white.

*Season:* Common summer resident.

*Records:* Fayette Co. Apr.—Sept. (W. D. F.); Lexington earliest arr. Mar. 25, 1917 (C. K. Morrell); Twila (W. D. F.); Nelson Co. earliest arr. Feb. 6, 1917; latest dep. Oct. 29, 1919; heavily incubated eggs Apr. 10, 1921; 5 young two days old Apr. 14, 1921 (B. J. Blincoe); eggs Mar. 29, (C. W. Beckham); Bowling Green, Mar. 9—Oct. 23 (G. Wilson); Ballard Co. (G. Wilson); Woodford Co.; Anderson Co.; Clark Co.; Jessamine Co. (W. D. F.); Harlan Co. Apr. 27, 1923 (V. Dodge and W. D. F.).

*Remarks:*

Easily domesticated and very friendly. Usually returns to the same locality year after year to nest, but seldom uses the last years nest probably because of parasites to which it is very subject. Sings a monotonous "Pewit, phoebe, phoebe" which gives it its popular name. Often nests in coal mines in Kentucky. The writer found one nest in a mine at Twila thirty-two feet from the entrance.

132. (459) *Nuttallornis borealis* Swains.—Olive-sided Flycatcher.

*Description:* L. 7.5; W. 4; T. 3. Upperparts olive-brown; wings and tail dark brown; throat, middle of breast and belly white; sides olive-gray; flanks yellowish-white. Sexes alike.

*Season:* Rare migrant.

*Records:* Lexington, May 14, 1916 (C. K. Morrell); Bowling Green, May 11—13; Sept. 16—Oct. 25 (G. Wilson); Woodford Co. May 9, 1912 (Mrs. L. Brodhead).

*Remarks:*

Recognized by the conspicuous patch of fluffy yellowish feathers on each flank.

**133. (461) *Myiochanes virens* Linn.—Wood Pewee.**

*Description:* L. 6; W. 3; T. 2.5. Above, olive brown, darker on head; wings and tail brownish-black; white ring around eye; breast olive-gray; throat white; belly yellowish. Sexes similar. Nest: of shredded bark and fibers often covered with lichens, on a low limb. Eggs: 2—5, white, speckled with brown at larger end.

*Season:* Common summer resident.

*Records:* Fayette Co. May—Sept. (W. D. F.); Lexington earliest arr. Apr. 4, 1906 (M. Didlake); Nelson Co. earliest arr. May 4, 1913; latest dep. Oct. 4, 1913; nest building May 24, 1921 (B. J. Blincoe); Bowling Green, Apr. 21—Oct. 8 (G. Wilson); Ballard Co. common, (G. Wilson); Woodford Co. abundant 1921 (W. D. F.); Harlan Co. Apr. 27, 1923 (V. Dodge and W. D. F.).

**Remarks:**

Generally found in dense woodlands. Its popular name is suggested by its call which is, however, in three distinct syllables—"pee-a-wee"—with the accent on the last. Pewees feed entirely on insects and are very industrious. One female while feeding its young has been known to average an insect a minute. In Professor King's report on stomachs analyzed, a total of 41 specimens showed that 18 had eaten 66 beetles; 14 had devoured 41 flies; 2 a butterfly each; 9, 13 dragonflies; 11, 29 wasps and bees; 1 a moth, and 1 a grasshopper. Certainly a beneficial bird.

**134. (463) *Empidonax flaviventris* Baird.—Yellow-bellied Fly-catcher.**

*Description:* L. 5.5; W. 2.5; T. 2. Above, olive-green, darker on head; wings dark brown with two white bands; tail brown, edged with olive green; yellow ring around eye; underparts yellow. Sexes alike.

*Season:* Visitant.

*Records:* Lexington, May 23, 1920 (D. J. Healy); Nelson Co. Sept. 4, 1920 (B. J. Blincoe).

**Remarks:**

Breeds in the far north and winters in South America. Passes through Kentucky occasionally in its migration.

**135. (465) *Empidonax virescens* Vieill.—Acadian Flycatcher; Green Flycatcher.**

*Description:* L. 5.5; W. 2.5; T. 2.5. Decidedly greenish above; wings and tail dark brown; wing with two conspicuous wingbars; underparts white. Sexes alike. Nest: shallow, loosely but strongly woven of grass and stems fastened in the fork of a low limb. Eggs: 2—4, creamy, speckled with different shades of brown.

*Season:* Common summer resident.

*Records:* Lexington, May 9, 1920 (D. J. Healy); Apr. 20, 1920 (W. Sams); Fayette Co. May—Aug. (W. D. F.); Nelson Co. arr. May 1, eggs May 20 (C. W. Beckham); May 8—Aug. 19, 1920; May 5, 1921 (B. J. Blincoe); Bowling Green, Apr. 21—Oct. 4 (G. Wilson); Ballard Co. (G. Wilson); Woodford Co. July, 1921 (W. D. F.).

**Remarks:**

Very abundant along the rivers. It seems to enjoy being near the water. A dead bird which we took away from a cat on a farm near Tyrone, had in its stomach the remains of 27 diptera of various kinds. Apparently it feeds largely on flies.

**136. (467) *Empidonax minimus* Baird.—Least Flycatcher.**

*Description:* L. 5; W. 2.5; T. 2. Above, olive-gray, darker on head, lighter on rump; wings and tail dark brown; wings with two white cross-bars; tail very narrow; underparts white. Sexes alike.

*Season:* Common migrant.

*Records:* Nelson Co. Apr.—May (C. W. Beckham); Lexington, Apr. 28, 1918 (C. K. Morrell); May 3, 1904; Apr. 26, 1905; Apr. 29, 1909; May 10, 1910; Apr. 27, 1912; May 1, 1913; May 3, 1914 (M. Didlake); May 11, 1919 (D. J. Healy); Bowling Green, Apr. 1—May 14; Sept. 7—28 (G. Wilson); Harlan Co. Apr. 27, 1923 (W. D. F.).

**Remarks:**

The smallest of our flycatchers. Also called the "chebec" from the rather clearly enunciated call. Like the other flycatchers it has no real song.



**Family Alaudidae.—The Larks.**

*Characters:* Hind claw very long; back of tarsus rounded; beak stout; nostrils with tufts of bristles; chiefly terrestrial; sing on the wing.

**137. (474) *Otocoris alpestris alpestris* Linn.—Horned Lark.**

*Description:* L. 8; W. 4.5; T. 3. Conspicuous black tufts or "horns" on crown. Above, grayish-brown; forehead, a line over eye and throat yellow; crown, a line on each side of head, and patch on breast black; tail black in middle, white at edges; rest of plumage grayish-white. Winter plumage paler. Female smaller than male.

*Season:* Rare winter resident.

*Records:* Kentucky (H. Garman); Lexington, Jan. 19, 1913 (M. Didlake).

*Remarks:*

Generally seen in flocks in open country. Should be found in northern part of the State.

**138. (474b) *Otocoris alpestris praticola* Hensh.—Prairie Horned Lark.**

*Description:* L. 7.2; W. 4; T. 2.5. Very similar to preceding but smaller and paler and with the forehead and line over eye white instead of yellow.

*Season:* Common winter resident; rare summer resident.

*Records:* Nelson Co. Nov. (C. W. Beckham); summer resident in one locality, (B. J. Blincoe); Bowling Green, July 28—May 11 (G. Wilson).

*Remarks:*

Generally found in flocks and always on the ground. Reported as abundant in northern and western parts of State but we have no definite data.

**Family Corvidae.—Crows and Jays.**

*Characters:* Rather heavy-bodied birds; beak stout; nostrils concealed by bristly feathers; first primary only about half as long as fourth and fifth which are the longest; outer tail-feathers shortest; legs and feet strong; omnivorous feeders. A family of very intelligent birds.

**139. (477) *Cyanocitta cristata* Linn.—Blue Jay; "Jay-bird".**

*Description:* L. 11; W. 5; T. 5. Crest conspicuous. Upperparts gray-blue; forehead black; irregular black band around neck; wings and tail bright blue, barred with black; underparts sordid white. Sexes alike. Nest: rough, of all kinds of material, generally in low crotch of tree. Eggs: 3—6, creamy, blotched with brown.

*Season:* Common permanent resident; most common in summer.

*Records:* From every county in the State. Nelson Co. nest-building Apr. 11, 1913; May 9, 1920 (B. J. Blincoe); Fayette Co. Apr.—Oct. (W. D. F.); Lexington earliest arr. Apr. 10, 1906 (M. Didlake).

*Remarks:*

A beautiful bird, and very clever, but a reprobate and a bully. Beckham called it "A noisy, quarrelsome, and nest-robbing pirate".

**140. (479) *Aphelocoma cyanea* Vieill.—Florida Jay.**

*Description:* L. 12; W. 5; T. 6. Head and neck bright blue; back gray; wings and tail gray-blue; tail rounded; underparts white with bluish streaks on throat and breast. Not crested.

*Season:* Probably not at all.

*Records:* Kentucky (?) (H. Garman).

*Remarks:*

Professor Garman lists this bird in his "Vertebrate Animals of Kentucky" as having been "said to have been taken in Kentucky". It is a Florida species and Coues says of it "Very local, and not authentic as occurring outside of Florida".

**141. (486) *Corvus corax sinuatus* Wagl.—Raven.**

*Description:* L. 27; W. 18; T. 11. Plumage entirely black with metallic luster; neck feathers disconnected, long, narrow and pointed; beak and feet black; eyes brown; tail decidedly rounded.

*Season:* Visitant.

*Records:* Corbin, Aug, 1920 (W. D. F.).

*Remarks:*

Its much larger size distinguishes it from the crow for which it might be otherwise mistaken.

**142. (488) *Corvus brachyrhynchos* Brehm.—Crow.**

*Description:* L. 19; W. 12; T. 7. Plumage entirely black; neck feathers normal, short and rounded; tail only slightly rounded. Sexes alike. Nest: a rough collection of sticks, leaves and grass in trees about 30 feet up. Eggs: bluish-green, varying to olive and spotted with brown.

*Season:* Abundant permanent resident.

*Records:* From every county in the State; Fayette Co. every month in 1919 (W. D. F.); Nelson Co. eggs Apr. 9, 1916; eggs half incubated Apr. 13, 1920; fresh eggs Apr. 3, 1921; young leaving nest May 10, 1921 (B. J. Blincoe); Bourbon Co. Mar. 29, 1923 (V. Dodge and W. D. F.).

*Remarks:*

The economic status of the crow is still a matter of dispute. It undoubtedly does much damage to corn, to other birds, and to young chickens; it steals eggs and has been accused of spreading hog cholera. On the other hand, it eats enormous numbers of mice, grasshoppers, noxious beetles, white grubs, bugs, cutworms, caterpillars and tobacco worms and is an excellent scavenger. Whenever its case is tried, the jury is generally hung. Mr. E. A. Schwartz says: "The facts, on the whole, speak overwhelmingly in favor of the crow".\*

At night crows congregate in large rookeries or "roosts" which sometimes accommodate enormous numbers of birds and these roosts are usually occupied during the winters. Professor Wilson reports three great roosts near Bowling Green and Kalmbach records the following winter roosts from the State:\*\*

Guthrie. Thousands of birds in cedars and oaks.

Harrodsburg. Large numbers.

Lexington. Several roosts, 2,000 to 5,000 each.

Versailles. 1,000,000 birds (?).

\*U. S. Dept. of Agr. Div. of Ent. Bull. 12 p. 30. 1886

\*\*Kalmbach, E. R. Winter Crow Roosts, Yearbook, U. S. Dept. of Agr.

The crow is noted for his cunning and cleverness. Chapman\* says:

"In spite of his great circle of acquaintances he has few friends. An unfortunate fondness for corn has placed him under the ban of the agriculturist; there is a price on his head; every man's hand is against him. Apparently he does not mind this in the least; in fact, he seems to rejoice in being an outlaw. As for fear, I doubt if he knows what it means; he has far too much confidence in his undoubted ability to escape his human persecutors. He laughs at their attempts to entrap him; his insolent assurance is admirable. For several centuries man has been his sworn enemy, nevertheless he appears to have held his own, accepting and adjusting himself to every new condition."

**Family Icteridae.—Blackbirds and Orioles.**

*Characters:* Base of beak extended backward above, dividing the feathers of the forehead; nostrils exposed; first three primaries about equal in length; outer tail-feathers shortest; tarsus with hind edge compressed; beak not hooked at tip. Omnivorous feeders.

**143. (494) *Dolichonyx oryzivorus* Linn.—Bobolink.**

*Description:* L. 7; W. 4; T. 2.5. Male: front of head, neck and underparts black; back of head and nape yellow; back black, with yellow streaks; lower back and rump white, base of wings with broad white patch, rest of wings black with yellow markings; tail black. Female: upperparts olive-buff, streaked with black; below, yellowish with brown spots. In the fall and winter the male resembles the female.

*Season:* Common spring migrant; seldom seen in the fall.

*Records:* Bowling Green, Apr. 27 May 17 (G. Wilson); Nelson Co. earliest arr. Apr. 22, 1915; fall records Aug. 31—Sept. 28, 1917; Aug. 18—Sept. 21, 1920 (B. J. Blincoe); Lexington, Apr. 30, 1919 (C. K. Morrell); May 6, 1906; Apr. 25, 1909; May 15, 1910; Apr. 16, 1911; May 4, 1912 (M. Didlake); May 4, 1919 (D. J. Healy); May 5, 1920 (W. Sams).

\*Chapman, F. M. Birds of Eastern North America, pp. 313-314.

*Remarks:*

The males usually precede the females by several days in the migrations.

**144. (495) *Molothrus ater* Budd.—Cowbird.**

*Description:* L. 8; W. 4; T. 3. Male: mostly black with head and neck brown. Female: smaller; brownish gray, lighter below. Nest: lays in nests of other birds. Eggs: white, regularly speckled with brown; number unknown.

*Season:* Common summer resident.

*Records:* Lexington, May 5, 1904; May 14, 1905; May 27, 1906; May 5, 1908; Apr. 22, 1911; Apr. 29, 1912 (M. Didlake); Nelson Co. arr. Mar. 4—Apr. 7, eggs found in nests of Indigo Bunting and Bachman's Sparrow (B. J. Blincoe); Bowling Green, Mar. 5—Oct. 16 (G. Wilson); Ballard Co. (G. Wilson).

*Remarks:*

Notorious for its habit of laying its eggs in the nests of other birds and allowing these birds to care for its young. Over 90 species of other birds have been recorded in whose nests eggs of cowbirds have been found. In this State its eggs are most commonly found in the nests of the Phoebe, Yellow-breasted Chat and Indigo Bunting.

It is generally found in flocks in pastures, often near cattle, hence the popular name. Wedmann thinks that it formerly accompanied the herds of bison in their wanderings and thus had no time to build a nest or rear a family.

**145. (496) *Agelaius phoeniceus* Linn.—Red-winged Blackbird.**

*Description:* L. 10; W. 5; T. 4. Male: plumage deep black with a bright patch of scarlet at base of wing. Female: head and back dusky, streaked with reddish; rump and tail brown with gray markings; wings brown with little red; underparts black and white. Nest: in colonies in aquatic weeds and grasses. Eggs: 2—6, pale green, speckled with dusky.

*Season:* Summer resident.

*Records:* Fayette Co. Apr.—Sept. (W. D. F.); Lexington earliest arr. Mar. 17, 1907 (M. Didlake); Nelson Co.

earliest arr. Feb. 28, 1917; dep. Oct. 29, 1919; fresh eggs Apr. 30; eggs and young May 22, 1919 (B. J. Blincoe); Bowling Green, Mar. 1—Nov. 10 (G. Wilson); Bourbon Co. Mar. 29, 1923 (V. Dodge and W. D. F.).

*Remarks:*

Usually in flocks in marshy places. It is a beautiful and beneficial bird. Its mating call of "Ok-a-lee" is indeed a sign that spring has arrived. Mr. Blincoe records ten nests in a cat tail pond near Bardstown in 1921.

**146. (501) *Sturnella magna* Linn.—Meadow lark; "Field lark."**

*Description:* L. 11; W. 5; T. 3.5, female smaller. Above, mottled black and yellow; yellow stripe over eye and down

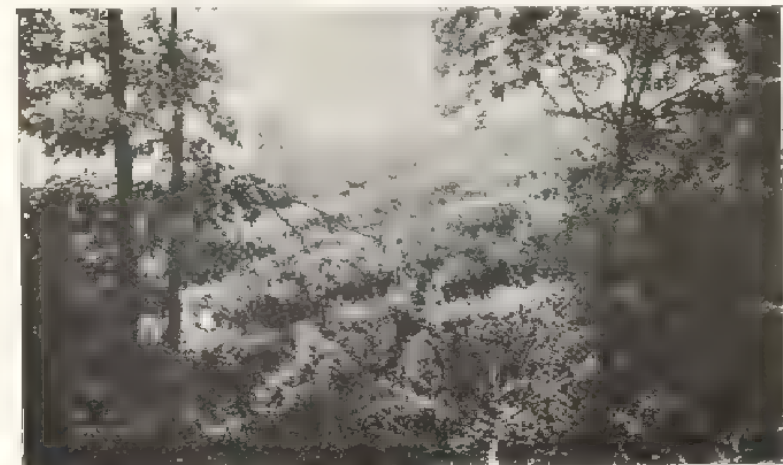


Fig 74 Photo by W. R. Jilison  
HABITAT OF THE MEADOW LARK AND MOURNING DOVE  
Rolling grassy slopes with low trees close at hand

center of crown; black stripe behind eye; outer tail-feathers white; sides spotted with brown; underparts yellow with a broad black crescent on the breast. Sexes similar. Nest: on ground, arched over with grass. Eggs: 3—7, white, spotted with brown.

*Season:* Permanent resident; less common in winter.



**Records:** From every county in the State; Fayette Co. every month in 1920 (W. D. F.); Nelson Co. eggs May 2, 1913; young about five days old July 16, 1919; newly hatched young May 17, 1920 (B. J. Blincoe); Bourbon Co. Mar. 29, 1923 (V. Dodge and W. D. F.).

**Remarks:**

Its clear, piercing whistle is one of the sweetest sounds of spring. A very beneficial and popular bird but the nests and young are often destroyed by early mowings and the eggs and fledglings are devoured in large numbers by mice, rats and snakes.

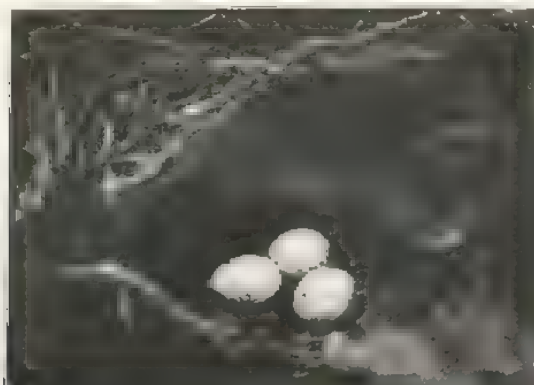


Photo by W. E. Campbell

FIG. 75

NEST OF MEADOW LARK WITH EGGS

**147. (506) *Icterus spurius* Linn.—Orchard Oriole.**

**Description:** L. 7; W. 3; T. 3. Male: head, neck, throat, and upper back black; breast, belly, and rump dark red; wings black, marked with white and red; tail black. Female: olive green above; yellow below; wings dusky with white bars. The plumage varies with the season of the year and the age of the bird. Nest: of green grass, usually in the fork of a limb about 15 feet up. Eggs: 3—6, bluish white, spotted with brown.

**Season:** Summer resident.

**Records:** Fayette Co. May—Aug. (W. D. F.); Lexington

earliest arr. Apr. 25, 1920 (D. J. Healy); Nelson Co. earliest arr. Apr. 19, 1917; latest dep. Aug. 23, 1919; nest building May 23, 1916; May 16, 1921; young leaving nest July 2, 1921 (B. J. Blincoe); Bowling Green, Apr. 17—Aug. 24 (G. Wilson); Ballard Co. (G. Wilson); Woodford Co.; Anderson Co. (W. D. F.).

**Remarks:**

One of the finest orchard birds in Kentucky. Beautiful and an excellent singer. The food is almost entirely caterpillars, beetles, bugs, cabbage-worms and plant lice. Should be most carefully protected.



Photo by James Speed

FIG. 76

THE MASTER WEAVER

The Baltimore Oriole, a bird of gorgeous plumage and beautiful voice which weaves a wonderful nest.

**148. (507) *Icterus galbula* Linn.—Baltimore Oriole.**

**Description:** L. 7.5; W. 3.5; T. 2.5. Male: head, neck, throat and back black; rump orange; tail black with orange edges; wings black and white; rest of plumage fiery orange. Female: olive-brown where the male is black; orange not so bright. Nest: purse-shaped, pensile, suspended from slender branches; made of strings, hair and shredded bark. Eggs: 4—6, grayish-white, with spots of brown and black.



FIG. 7  
A MARVEL OF ARCHITECTURE  
The wonderfully woven nest of the Baltimore Oriole. Note the strings and hair

*Season:* Summer resident.

*Records:* Fayette Co. May—July (W. D. F.); Lexington earliest arr. Apr. 23, 1908 (M. Didlake); Nelson Co. earliest arr. Apr. 14, 1918; latest dep. Aug. 18, 1920; nest building May 9, 1920 (B. J. Blincoe); Bowling Green, Apr. 12—Sept. 17 (G. Wilson); Ballard Co. (G. Wilson); Woodford Co. abundant 1921 (W. D. F.).

*Remarks:*

One of the most gayly attired of all of our birds, proudly flaunting the colors of Lord Baltimore. The nest is a wonderful structure as shown in the accompanying figure. The clear call of this bird is supposed to sound like "Hurry up, hurry up, quick!" It feeds chiefly on insects but does some damage to grapes and other small fruits.

The nest which is here figured was given us by Mr. George C. Easton of Montgomery County. It is woven entirely of string, yarn and hair.

149. (509) *Euphagus carolinus* Mull.—Rusty Blackbird.

*Description:* L. 9; W. 4.5; T. 4. Male: entirely black with greenish reflections. Female: brown above and brownish-yellow below.

*Season:* Migrant.

*Records:* Nelson Co. Feb. 15—Nov. 4 (C. W. Beckham); Dec. 10—12, 1917; Mar. 12, 1920 (B. J. Blincoe); Bowling Green, Apr. 3—22; Aug. 17—Dec. 7 (G. Wilson).

*Remarks:*

Generally in small flocks around water. Beckham says: "The 'rusty' part of his name will apply as well to his voice as to his coat."

150. (511b) *Quiscalus quiscula aeneus* Ridgw.—Bronzed Grackle; "Crow Blackbird".

*Description:* L. 13; W. 5.5; T. 5.5. Male: head and neck brilliant metallic purplish-green; rest of plumage rich bronze purple. Female: smaller and darker. Nest: of grass, leaves and mud, lined with feathers; in cavities or among branches of trees; usually in colonies. Eggs: 4—7, greenish-white to light brown, marked with dark splotches.

*Season:* Abundant summer resident.

*Records:* Fayette Co. Feb.—Oct. (W. D. F.); Lexington earliest arr. Jan. 23, 1916 (C. K. Morrell); Nelson Co. earliest arr. Feb. 12, 1921; latest dep. Nov. 22, 1915 (B. J. Blincoe); Bowling Green, Feb. 4—Nov. 27; flock seen Jan. 23, 1921 (G. Wilson); Ballard Co. abundant (G. Wilson); reported from almost every county in the State as common to abundant; Bourbon Co. Mar. 29, 1923 (V. Dodge).

*Remarks:*

Very noisy birds but with beautiful iridescent plumage. They appear each year in large numbers on the University of Kentucky campus at Lexington, arriving about the middle of February. They feed about equally on animal and vegetable food

**Family Fringillidae.—Finches and Sparrows.**

*Characters:* Hind edge of tarsus compressed; beak stout, conical, not hooked but often noticed and always shorter than the head; base of beak usually bristled; first primary never more than half an inch shorter than third and fourth which are the longest. The largest family of birds.

**151 (514) *Hesperiphona vespertina* Coop. Evening Grosbeak.**

*Description:* L. 8; W. 4.5; T. 3.5. Male: crown black; forehead and a line over eye yellow; upperparts olive-brown, wing with secondaries white and primaries black; scapulars and rump yellow; tail black; underparts yellowish-brown, darker on throat; beak very thick. Female: Above, gray tinged with yellowish; white patch at base of primaries.

*Season:* Rare winter visitant.

*Records:* Fulton Co. (A. Butler).

*Remarks:*

Very unusual to find this bird as far south as Kentucky.

**152. (517) *Carpodacus purpureus* Gmel. —Purple Finch.**

*Description:* L. 6; W. 3; T. 2. Male: purplish-red, brightest

on head, streaked with dusky on back, wings and tail, and lighter on underparts. Female: Upperparts grayish-brown, streaked with black; below, sordid white streaked with brown; no red.

*Season:* Uncommon winter resident.

*Records:* Lexington, Mar. 30, 1919 (C. K. Morrell); May 7, 1907; Apr. 13, 1908; Apr. 18; 1909; May 1, 1910 (M. Didlake); May 3, 1919 (D. J. Healy); Nelson Co. earliest arr. Dec. 26, 1915; latest dep. Apr. 28, 1920 (B. J. Blincoe); Bowling Green, Oct. 16—May 8 (G. Wilson).

*Remarks:*

They keep to wooded country and seem to prefer elms.

**153. *Passer domesticus* Linn.—English Sparrow.**

*Description:* L. 6.3; W. 3; T. 2.3. Male: crown gray; sides of head chestnut; back streaked with black; rump gray; wings chestnut and white; throat black; underparts dirty white. Female: grayer, with no black on throat. Nest: a poor structure of all sorts of material in all sorts of places. Eggs: 4—7, varying from white to brown.

*Season:* Persistent permanent resident.

*Records:* From every county in the State.

*Remarks:*

An unmitigated pest. Chapman says: "Its harsh, insistent, incessant chirp is now the dominant bird voice about our homes, where we may never again hope to hear a chorus of native bird music unmarred by the discordant chatter of this alien."

**154. (521) *Loxia curvirostra minor* Brehm.—American Crossbill.**

*Description:* L. 6; W. 3.5; T. 2. Tips of mandibles crossed. Male: brick red above; wings and tail brown; below, reddish. Female: brown, streaked with dusky.

*Season:* Rare winter visitant.

*Records:* Nelson Co. Nov. 18, 1882 (C. W. Beckham); Lexington, Apr. 24, 1920 (W. Sams); Mar. 4, 1921 (W. D. F.); Bowling Green, Jan. 19, 1920 (G. Wilson).

*Remarks:*

Erratic, wandering birds, usually seen in small flocks.



**155. (529) *Astragalinus tristis* Linn.—Goldfinch; "Yellow-Bird".**

**Description:** L. 5; W. 3; T. 2. Male: bright canary yellow with crown wings and tail black. Female: yellow-gray above; greenish yellow below; no black on head; wings and tail black. Nest: of fine grasses and moss, lined with thistle-down, in an upright fork. Eggs: 3—6, pale bluish-white.

**Season:** Permanent resident; more common in summer.

**Records:** Fayette Co. (W. D. F.); Nelson Co. (B. J. Blincoe); Lexington earliest record Apr. 16, 1910 (M. Didlake); Bowling Green (G. Wilson); Ballard Co. (G. Wilson); Harlan Co.; Bell Co.; Boyle Co. (W. D. F.); Lexington, May 3, 1923 (W. D. F.).

**Remarks:**

Usually in small flocks except when nesting. Feeds largely on weed seeds and is particularly fond of thistle on account of which it is sometimes called the "Thistle-Bird". Also fond of sunflower seeds.

**156. (532) *Spinus notatus* DuBus.—Black-headed Goldfinch.**

**Description:** L. 5; W. 2.7; T. 1.8. Head black; back dull yellow; wings black with double row of yellow spots; tail yellow at base and black at tip; rest of plumage bright yellow.

**Season:** Probably does not occur at all

**Records:** Kentucky (Audubon).

**Remarks:**

Coues questions this record.

**157. (533) *Spinus pinus* Wils.—Pine Siskin.**

**Description:** L. 5; W. 2.5; T. 2. Tail deeply forked. Above, olive-brown; below, whitish, streaked with dusky; outer edges of tail-feathers yellowish-green. Sexes alike.

**Season:** Winter visitant.

**Records:** Henderson (Audubon); Nelson Co. Oct. 21, 1912, flock of 15 (B. J. Blincoe).

**Remarks:**

Not often seen in Kentucky but a regular visitor to central Indiana and Illinois and occasionally strays across the Ohio River.

**158. (534) *Plectrophenax nivalis* Linn.—Snow Bunting; "Snowflake".**

**Description:** L. 7; W. 4.5; T. 3. Summer: white with black spot on back, wings, and middle of tail; beak black. Winter: white, much streaked with dark brown; beak yellow.

**Season:** Rare winter visitant if it occurs at all.

**Records:** Kentucky (Audubon and Butler).

**Remarks:**

Not recorded in recent years.

**159. (536) *Calcarius lapponicus* Linn.—Lapland Longspur.**

**Description:** L. 6.5; W. 3.5; T. 2.5. Hind claw as long or longer than its toe. Summer: Above, brown, spotted with black; head and throat black with white stripe behind eye; wings gray and dusky; underparts white. Winter: similar but throat white.

**Season:** Doubtful if it ever occurs now.

**Records:** Henderson, Feb. 15, 1819 (Audubon).

**Remarks:**

A northern bird which formerly came south with the Horned Larks.

**160. (540) *Pooecetes gramineus* Gmel.—Vesper Sparrow.**

**Description:** L. 6; W. 3; T. 2.5. Above, streaked gray and black; wings dark brown with the lesser coverts brick red; tail brown with the outer feathers white; underparts white. Sexes alike. Nest: of grass on the ground in open fields. Eggs: 4—5, white, speckled with reddish brown.

**Season:** Migrant; summer resident in some sections of the State.

**Records:** Fayette Co. Apr.—May (W. D. F.); Nelson Co. Mar. 16, 1913; Mar. 15, 1914; Mar. 24, 1916; Mar. 15, 1917; Mar. 8, 1918; Mar. 23, 1920; Mar. 11, 1921; Oct. 12—Nov. 7, 1912; Oct. 30, 1916; Nov. 2—11, 1917; Sept. 12—Nov. 18, 1919; Oct. 22—Nov. 10, 1920 (B. J. Blincoe); Lexington, Apr. 20, 1904; Apr. 15, 1905; Apr. 22, 1906; Apr. 6, 1908; Mar. 25, 1911; Apr. 6, 1913 (M. Didlake); Apr. 18, 1919 (D. J. Healy); May 6, 1920 (W. Sams); Bowling Green, Mar. 12—May 1; Oct. 7—30 (G. Wilson).

**Remarks:**

Recognized in the field by the white outer tail-feathers when it flies. Has a beautiful sweet, clear, but rather plaintive song, generally heard at sunset, hence the name "vesper" sparrow.

**161. (542a) *Passerculus sandwichensis savanna* Wils.—Savannah Sparrow.**

**Description:** L. 5.5; W. 2.5; T. 2. Above, streaked with gray, brown and black; yellow line over eye; wings dusky-brown with yellow edges to feathers; tail brown, margined with whitish; underparts white, thickly streaked with brown and reddish. Sexes alike.

**Season:** Migrant.

**Records:** Lexington, Apr. 27, 1919 (D. J. Healy); Nelson Co. Mar. 25, 1913; Mar. 3, 1918; Mar. 28—Apr. 12, 1921 (B. J. Blincoe); Bowling Green, May 1—11; Oct. 8—24 (G. Wilson).

**Remarks:**

Inconspicuous birds which stay close to the ground. Seldom seen in the fall in Kentucky. Mr. Blincoe reported them as fairly common near Bardstown in the spring of 1921.

**162. (546) *Ammodramus savannarum australis* Mayn.—Grasshopper Sparrow.**

**Description:** L. 5.5; W. 3.5; T. 2. Above, mixed black, brown, ashy and buff; crown black; an orange spot in front of eye; bend of wing and edge of wing yellow; underparts white without streaks. Sexes alike. Nest: of grass, well concealed, on the ground. Eggs: 3—5, white, spotted with reddish.

**Season:** Summer resident.

**Records:** Lexington, Mar. 25, 1917 (C. K. Morrell); June 3, 1904; May 12, 1905; May 6, 1906 (M. Didlake); June 8, 1919 (D. J. Healy); Mar. 21, 1920 (D. J. Healy); Nelson Co. earliest arr. Mar. 26, 1921; latest dep. Nov. 7, 1920; eggs half incubated May 19, 1921; young being fed in nest Aug. 14, 1917; fresh eggs July 5, 1921 (B. J. Blincoe); Bowling Green, Mar. 26—Sept. 4 (G. Wilson).

**Remarks:**

A typical field sparrow. Very retiring and not often noticed. Its thin insect-like voice gives it its popular name.

**163. (547) *Passerherbulus henslowi* Aud.—Henslow's Sparrow.**

**Description:** L. 5; W. 2; T. 2. Head and neck olive-green; upperparts chestnut-brown streaked with black and gray; bend of wing yellowish; tail brown; outer tail-feathers shortest; throat and breast buff; belly yellow. Sexes alike.

**Season:** Migrant.

**Records:** Newport 1820 (Audubon); Nelson Co. 1884 (C. W. Beckham); Lexington, May 2, 1920 (D. J. Healy); Bowling Green, Apr. 23—May 16; Sept. 6—Oct. 24 (G. Wilson).

**Remarks:**

Kentucky is the type locality for this sparrow, but it is not common.

**164. (549) *Passerherbulus caudacutus* Gmel.—Sharp-tailed Sparrow.**

**Description:** L. 6; W. 2.3; T. 2. Crown brown with a blue-gray line through center; buff ring around auriculars; buff line over eye and another on side of throat; upperparts greenish-brown with grayish markings; bend of wing yellow; tail narrow and sharply pointed; breast and sides yellowish, streaked with black. Sexes alike.

**Season:** Rare visitant.

**Records:** Woodford Co. Nov. 15, 1910 (Mrs. L. Brodhead).

*Remarks:*

An inhabitant of the eastern salt-marshes. Only one record from Kentucky.

**165. (552) *Chondestes grammacus* Say.—Lark Sparrow.**

*Description:* L. 6.5; W. 3.5; T. 3. Crown chestnut with white strip down middle; white stripe over eye; black line through eye; white crescent below eye; upperparts rusty brown, streaked with black; tail dusky, with outer feathers tipped with white; underparts white, a small black spot on breast. Nest: of grass, on ground or in low bushes. Eggs: 3—5, white, speckled with brown at larger end.

*Season:* Migrant; rare summer resident.

*Records:* Nelson Co. Apr.—Aug.; eggs June 14, 1920; young 4—5 days old May 24, 1916; earliest arr. Apr. 11, 1914; latest dep. Aug. 17, 1921 (B. J. Blincoe); fledglings June 25 (C. W. Beckham); Bowling Green, Mar. 27—May 5; Oct. 18 (G. Wilson); Ballard Co. (G. Wilson); Calloway Co., nests (G. Wilson).

*Remarks:*

An excellent singer. Is said to be fond of potato-beetles.

**166. (554) *Zonotrichia leucophrys* Forst.—White-crowned Sparrow.**

*Description:* L. 7; W. 3; T. 3. Crown white with a black band on each side; black stripe behind each eye almost meeting on neck at back; white stripe over each eye; upperparts gray-brown; wings brown with white markings; underparts gray. Sexes alike.

*Season:* Migrant; occasional winter resident.

*Records:* Lexington, Apr. 24, 1918 (C. K. Morrell); Mar. 25, 1903; Apr. 17, 1907; Mar. 25, 1908 (M. Didlake); May 1, 1920 (D. J. Healy); Apr. 30, 1920 (W. Sams); Bowling Green, Oct. 11—May 11 (G. Wilson); Nelson Co. May 1—9, 1915; Apr. 23—May 12, 1916; Apr. 30—May 16, 1917; Apr. 26, 1918; Apr. 27—May 9, 1920; wintered in 1920—1921 (B. J. Blincoe).

*Remarks:*

Feeds on insects as well as seeds.

**167. (558) *Zonotrichia albicollis* Gmel.—White-throated Sparrow.**

*Description:* L. 7; W. 3; T. 3. Crown black with white line through middle; throat conspicuously white; upperparts reddish-brown, streaked with black and white; band of wing yellow; underparts gray. Sexes alike.

*Season:* Winter resident.

*Records:* Fayette Co. Jan.—Apr. (W. D. F.); Nelson Co. Dec. 24—May 18 (C. W. Beckham); Oct. 17—Nov. 9, 1915; Oct. 11—Dec. 8, 1916; Oct. 7—Nov. 11, 1917; Sept. 28, Nov. 15, 1919; Oct. 3—Nov. 15, 1920; Mar. 3—May 13, 1917; Mar. 10, 1918; Mar. 21—May 8, 1920; Mar. 18—May 14, 1921 (B. J. Blincoe); Lexington, Jan. 22, 1918 (C. K. Morrell); Mar. 29, 1913 (M. Didlake); Apr. 27, 1919 (D. J. Healy); Jan. 18, 1920 (W. Sams); Bowling Green, Sept. 23—May 17 (G. Wilson).

*Remarks:*

Generally found in thickets.

**168. (559) *Spizella monticola* Gmel.—Tree Sparrow.**

*Description:* L. 6.5; W. 3; T. 3. Crown reddish-brown; white line over eye; upper mandible black, lower yellow; back streaked brown and black; rump gray; wings brown with two white bars; underparts white with a black spot on breast. Sexes alike.

*Season:* Common winter resident.

*Records:* Fayette Co. Jan.—Apr. (W. D. F.); Nelson Co. Dec. 22, 1917—Mar. 10, 1918; Jan. 5—Mar. 21, 1920; Dec. 24, 1920—Mar. 6, 1921 (B. J. Blincoe); Lexington, Apr. 24, 1918 (C. K. Morrell); May 11, 1913 (M. Didlake); Mar. 18, 1922 (W. D. F.); Bowling Green, Oct. 21—Mar. 12 (G. Wilson).

*Remarks:*

Identified by the black spot on the white breast. Mr. Blincoe states that these birds were very abundant near Bardstown during the severe winter of 1917-18. Professor Wilson reports that they have been common winter residents at Bowling Green since 1918.



169. (560) *Spizella passerina* Bech.—Chipping Sparrow;  
"Chippy".

*Description:* L. 5.5; W. 2.5; T. 2.2. Forehead black; top of head brick-red; gray line over eye; black line behind eye; beak black; back reddish, streaked with black and buff; rump gray; wings dusky; underparts grayish-white. Sexes alike. Nest: of grass, lined with horse-hair, in bushes, trees and vines not over ten feet up. Eggs: 3—4, pale green, speckled with brown at large end.

*Season:* Permanent resident; more abundant in summer.

*Records:* Fayette Co. Mar.—Sept. (W. D. F.); Nelson Co. earliest arr. Mar. 4, 1913; latest dep. Oct. 19, 1912; 4 fresh eggs May 11, 1921; nest building May 11, 1921; nest with one egg May 24, 1921 (B. J. Blincoe); Lexington; earliest arr. Mar. 20, 1907 (M. Didlake); Bowling Green (G. Wilson); Ballard Co. (G. Wilson); Woodford Co. (W. D. F.); Bourbon Co. Mar. 29, 1923; Harlan Co. Apr. 27, 1923 (V. Dodge and W. D. F.).

*Remarks:*

One of our best known sparrows. A friendly but unassuming little bird, easily recognized by its red cap and its monotonous "chippy-chippy-chippy" note.

170. (563) *Spizella pusilla* Wils.—Field Sparrow.

*Description:* L. 6; W. 2.5; T. 2.5. Beak reddish brown; crown reddish with gray lines; gray line over eye; sides of head gray; back mottled reddish, gray and black; rump lighter; wings brown with white markings; underparts white. Sexes alike. Nest: of grass lined with hair, on ground or in low bushes. Eggs: 3—5, greenish-white, marked with reddish.

*Season:* Permanent resident; more common in summer.

*Records:* Fayette Co. Mar. Aug. (W. D. F.); Nelson Co. Mar. 1—Dec. 1 (C. W. Beckham); 4 eggs June 11, 1916; 2 eggs June 21, 1921; 4 young about three days old June 22, 1921 (B. J. Blincoe); Lexington earliest arr. Mar. 21, 1904 (M. Didlake); Bowling Green (G. Wilson); Ballard Co. (G. Wilson); Anderson Co. July (W. D. F.).

*Remarks:*

Not limited to fields in spite of its name, but prefers hedge-

rows and low shrubs. Has a very beautiful song generally heard at twilight.

171. (567) *Junco hyemalis* Linn.—Slate-colored Junco;  
"Snow-Bird"; "Black Snowbird".

*Description:* L. 6.5; W. 3; T. 3. Male: upperparts, throat and breast blackish or slate-gray; wings brown; tail brown with the outer feathers white; underparts white. Female: upperparts browner; throat lighter.



Photo by James Speed

Fig. 73

A WINTER GUEST  
The Junco or "Snow Bird" which winters in Ken-  
tucky.

*Season:* Winter resident.

*Records:* Fayette Co. Dec. Mar. (W. D. F.); Nelson Co. Oct. 25—Apr. 15 (C. W. Beckham); earliest arr. Oct. 8, 1912; latest dep. Apr. 25, 1917 (B. J. Blincoe); Lexington earliest arr. Dec. 25, 1920 (W. D. F.); latest dep. Mar. 27, 1914 (M. Didlake); Bowling Green, Oct. 4—Apr. 19 (G. Wilson); Louisville, abundant (J. Speed); Bourbon Co. Mar. 29, 1923 (V. Dodge and W. D. F.).

*Remarks:*

The Junco does not seem to be common throughout the State, but Mr. Speed informs us that it is very abundant winter resident at Louisville, and Professor Wilson reports it as common at Bowling Green.

172. (575) *Peucaea aestivalis* Licht.—Pine-woods Sparrow.

*Description:* L. 5.5; W. 2.5; T. 2.5. Upperparts light chestnut, streaked with black and gray; gray line over eye; wings reddish brown with bend of wing yellow; tail gray-brown with outer tail-feathers shortest; breast and sides gray with scattered black spots; belly white. Sexes alike.

*Season:* Rare visitant if it occurs at all.

*Records:* Western Kentucky "probably" (H. Garman); Bowling Green (Miss S. F. Price).

*Remarks:*

This is a bird of the southern pine forests. We are including it only on the above authorities.

173. (575a) *Peucaea aestivalis bachmani* Aud.—Bachman's Sparrow.

*Description:* L. 5.5; W. 2.5; T. 2.5; Upperparts reddish-brown, streaked with gray and spotted with black; buff stripe over eye; dusky stripe on each side of chin; sides grayish buff; wings brown edged with yellowish; belly white. Sexes alike. Nest: of grass, well concealed on the ground. Eggs: 3—4, white.

*Season:* Rare summer resident.

*Records:* Nelson Co. Mar. 18, 1921; last heard singing Sept. 1, 1921; nests June, 1921 (B. J. Blincoe); Bowling Green, Mar. 26—Aug. 22 (G. Wilson).

*Remarks:*

Prefers open oak woodlands. Mr. Blincoe reports this sparrow as a fairly common summer resident in Nelson Co. We have no records from the Blue Grass.

174. *Peucaea aestivalis illinoensis* Coues.—Illinois Summer Finch; Oak-woods Sparrow.

*Description:* L. 6; W. 2.6; T. 3. Above, rusty gray streaked with ashy; wings reddish brown, marked with ashy, yellow, and reddish; tail gray-brown with lighter edges; sides of head, neck and body buff; underparts dull white. Sexes alike.

*Season:* Rare visitant.

*Records:* Bardstown (W. Brewster).

*Remarks:*

Known only from the record of capture near Bardstown as reported by William Brewster in the Bulletin of the Nuttall Ornithological Club, Vol 7: pp. 50—51. Jan., 1882.

175. (581) *Melospiza melodia* Wils.—Song Sparrow.



Photo by James Speed

FIG. 79

A PLAINLY CLAD MUSICIAN

The Song Sparrow, somber in dress but one of the sweetest singers of the Sparrow family

*Description:* L. 6.5; W. 2.5; T. 2.5. Crown reddish-brown with gray line through middle; gray line over eye; upperparts and wings streaked brown, gray and black; no white on wing; tail grayish-brown with outer feathers

shortest; underparts whitish, streaked with black or red-brown, the streaks running together to form a large irregular patch on the breast. Sexes alike.

*Season:* Winter resident.

*Records:* Fayette Co. Jan. -Mar. (W. D. F.); Nelson Co. breeds (B. J. Blincoe); Lexington earliest arr. Jan. 1, 1903 (M. Didlake); latest dep. Mar. 25, 1917 (C. K. Morrell); Bowling Green, Oct. 7-Apr. 27 (G. Wilson); Bourbon Co. Mar. 29, 1923; Harlan Co. Apr. 27, 1923 (V. Dodge and W. D. F.).

*Remarks:*

Both Garman and Beckham record this sparrow as an abundant permanent resident in the State and it is reported as breeding in a few localities. We have never seen it in the Blue Grass in the summer and are inclined to believe that its appearance in Kentucky at that season of the year is exceptional. As both its popular and specific name would indicate, it is an excellent singer.

**176. (583) *Melospiza lincolni* Aud.—Lincoln's Sparrow.**

*Description:* L. 6; W. 2.5; T. 2.5. Upperparts streaked with black, gray and brown; crown chestnut with a gray stripe down middle; gray stripe over eye; tail gray-brown, narrow and pointed; wings edged with white; underparts whitish, finely streaked with black, and with a broad buff band across the breast. Sexes alike.

*Season:* Migrant.

*Records:* Nelson Co. May 16, 1921 (B. J. Blincoe); Bowling Green, March 8—May 7; Sept. 20—Oct. 24 (G. Wilson).

*Remarks:*

A very shy, retiring bird, generally found in thickets in marshy regions.

**177. (584) *Melospiza georgiana* Lath.—Swamp Sparrow.**

*Description:* L. 6; W. 2.5; T. 2.5. Forehead black; crown chestnut; gray line over eye; black line behind eye; upperparts broadly streaked with black and gray; wing coverts red-brown; throat and belly white; breast grayish. Sexes similar.

*Season:* Migrant.

*Records:* Nelson Co. May 6, 1917; Apr. 11—May 18, 1921 (B. J. Blincoe); Bowling Green, Apr. 5—May 8; Oct. 13—Nov. 10 (G. Wilson).

*Remarks:*

Closely resembles the Song Sparrow but distinguished by the fact that there are no dark streaks on the underparts.

**178. (585) *Passerella iliaca* Merr.—Fox Sparrow.**

*Description:* L. 7; W. 3.5; T. 3. Upperparts rather bright reddish-brown, especially on rump and tail; two narrow white cross-bars on wings; underparts white, strongly marked with brown and black on breast. Sexes alike.

*Season:* Migrant; occasionally a winter resident.

*Records:* Lexington, Mar. 24, 1916 (C. K. Morrell); Mar. 26, 1904; Mar. 28, 1909 (M. Didlake); June 8, 1919 (D. J. Healy); Mar. 31, 1920 (W. Sams); Apr. 3, 1920; Mar. 30, 1921 (W. D. F.); Nelson Co. Feb. 29, 1916; Feb. 21—Mar. 18, 1917; Mar. 8, 1918; Feb. 28—Mar. 21, 1920; Mar. 6—14, 1921 (B. J. Blincoe); Bowling Green, Feb. 12—Mar. 24; Oct. 13—Nov. 10 (G. Wilson).

*Remarks:*

Distinguished by its large size, decidedly reddish appearance and heavily streaked breast. The migrating individuals are seldom seen in the fall.

**179. (587) *Pipilo erythrophthalmus* Linn.—Towhee; "Chewink"; "Joree"; "Jewee".**

*Description:* L. 8; W. 3; T. 3.5. Male: upperparts black; throat and breast black; sides reddish-brown; tail black with outer feathers tipped with white; underparts white; eyes red. Female: brown where the male is black. Nest: of leaves and bark, lined with grass, on or near the ground. Eggs: 3—5, white, evenly specked with red-brown.

*Season:* Permanent resident; More common in summer.

*Records:* Fayette Co. Mar.-Sept. (W. D. F.); Nelson Co. Nov. 4, 1919; Feb. 28, 1920 (B. J. Blincoe); Lexington, Apr. 16, 1924; Apr. 28, 1918; Mar. 23, 1919 (C. K. Morrell);



Apr. 14, 1903; Mar. 19, 1904; Apr. 22, 1905; Feb. 24, 1906; Apr. 21, 1906; Mar. 21, 1907; Mar. 21, 1909; Mar. 22, 1911; Apr. 19, 1913 (M. Didlake); Mar. 24, 1918; Mar. 28, 1920 (D. J. Healy); Bowling Green, winters, (G. Wilson); Ballard Co. rare (G. Wilson).

**Remarks:**

Usually seen about thickets and recognized by its clear vigorous call which suggests the various popular names.



FIG. 80 Photo by James Speed

**A HAPPY WHISTLER**

The Towhee, whose clear vigorous call suggests his various popular names

**180. (593) *Cardinalis cardinalis* Linn.—Cardinal; Cardinal Grosbeak; "Kentucky Cardinal"; "Redbird".**

**Description:** L. 8-9; W. 3.5-4; T. 4. Beak thick. Male: rich rose-red except throat and region about beak which is black; conspicuous crest; beak red. Female: upperparts gray-brown; traces of red on breast, wings and tail; underparts pale yellow-gray with tinges of red. Nest: of twigs, bark, grass and leaves, lined with grass, in bushes and vines not over ten feet up. Eggs: 3-4, white, spotted with brown, lavender and gray.

**Season:** Abundant permanent resident.

**Records:** From practically every county in the State as common or abundant; Fayette Co. every month in years 1919 and 1920 (W. D. F.); Nelson Co. 3 eggs hatching May 20,

1912; 3 eggs about half incubated June 11, 1916; 2 eggs heavily incubated May 16, 1921 (B. J. Blincoe); Bourbon Co. Mar. 29, 1923; Harlan Co. Apr. 27, 1923 (V. Dodge and W. D. F.).

**Remarks:**

One of the most brilliantly colored of all of our birds. A rather heavy and clumsy bird and somewhat of an aristocrat in habits. An excellent singer and can be tamed as a cage-bird. Often called the "Kentucky Cardinal" because of James Lane Allen's novel by that name. Its clear whistle is one of the most characteristic bird songs of Kentucky.

**181. (595) *Zamelodia ludoviciana* Linn.—Rose-breasted Grosbeak.**

**Description:** L. 8; W. 4; T. 3. Beak thick. Male: head, neck, back and tail black; rump white; wings black with white lines; breast bright rose-red; belly white. Female: upperparts gray-brown, streaked with buff and black; white line over eye; underparts white tinged with buff.

**Season:** Migrant.

**Records:** Nelson Co. Apr. 27, 1920 (B. J. Blincoe); Lexington, May 11, 1919 (C. K. Morrell); May 3, 1903; May 5, 1904; May 7, 1905; Apr. 28, 1907; Apr. 29, 1908; May 15, 1910; May 2, 1911; May 2, 1912; May 3, 1913 (M. Didlake); May 3, 1919 (D. J. Healy); Apr. 30, 1920 (W. Sams); Bowling Green, Apr. 20—May 15; Sept. 19—Oct. 13 (G. Wilson); Prairie Lake, Aug. 30, 1921 (G. Wilson); Harlan Co., Apr. 27, 1923 (V. Dodge).

**Remarks:**

A beautiful and valuable bird, generally seen in second-growth woodlands.

**182. (597) *Guiraca caerulea* Linn.—Blue Grosbeak.**

**Description:** L. 7; W. 3.5; T. 2.5. Beak thick. Male: above, dull blue, almost black; wings black, edged with blue and barred with chestnut. Female: above, yellow-brown; below, lighter; wings brown with two buff bars; tail brown, faintly tinged with blue.

**Season:** Rare visitant.

**Records:** Kentucky (Ridgeway), (H. Garman); Bowling Green

Apr., 1912 (G. Wilson); Woodford Co., May 9 and May 11, 1911 (Mrs. L. Brodhead).

**Remarks:**

Might easily be mistaken for a cowbird; the blue is not at all distinct in most specimens.

**183. (598) *Passerina cyanea* Linn.—Indigo Bunting.**

**Description:** L. 5.5; W. 2.5; T. 2. Male: entirely bright blue; purplish on head; wings and tail black, edged with blue. Female: brown above; whitish below, somewhat streaked with brown; rump, wings and tail showing some blue. Nest: of leaves and grass in low crotch of bush. Eggs: 3—5, pale bluish-white, faintly speckled with light brown.

**Season:** Abundant summer resident.

**Records:** Fayette Co. May—Sept. (W. D. F.); Nelson Co. earliest arr. Apr. 26, 1918; latest dep. Oct. 5, 1919; eggs July 3, 1916; Aug. 3, 1920; 2 incubated eggs and one cowbird's egg June 12, 1921 (B. J. Blincoe); Lexington earliest arr. Apr. 23, 1904 (M. Didlake); Bowling Green, Apr. 21—Oct. 16 (G. Wilson); Ballard Co. (G. Wilson); Woodford Co.; Anderson Co. abundant June—July, 1921 (W. D. F.); Harlan Co., Apr. 27, 1923 (V. Dodge and W. D. F.).

**Remarks:**

The male is easily recognized by the blue plumage but the female might be mistaken for one of the other sparrows. A very beneficial and fortunately a very common bird.

**184. (604) *Spiza americana* Gmel.—Dickcissel; Black-throated Bunting.**

**Description:** L. 6; W. 3; T. 2.5. Male: head and sides of neck gray; yellow line over eye; throat and breast yellow with a large black patch; upperparts brown streaked with black and gray; wings and tail dark brown; belly white. Female: no black patch on throat. Nest: of coarse grass and leaves in low bush. Eggs: 4—5, pale blue.

**Season:** Erratic summer resident.

**Records:** Nelson Co., May 15, 1915; May 15—July 16, 1917; June 8, 1920; May 1, 1921; nest with two fresh eggs June 13, 1917 (B. J. Blincoe); Blue Grass (Burroughs);

Lexington, May 7, 1916 (C. K. Morrell); June 13, 1904; May 12, 1905; May 6, 1906; May 17, 1908; May 8, 1909; June 12, 1910; May 6, 1911; May 19, 1912; May 18, 1913 (M. Didlake); Bowling Green, Apr. 29—Aug. 22 (G. Wilson).

**Remarks:**

Generally found in fields and pastures, feeding on insects and seeds. Apparently very common in some years and entirely absent in others. For example, they were abundant at Bardstown in 1915; then none were seen for the following two summers, but they appeared again in large numbers in 1917.

**Family *Tangaridae*.—The Tanagers.**

**Characters:** Beak somewhat swollen; upper mandible with irregular edge, slightly notched in middle; tail feathers of equal length; males with red in plumage. An American family.

**185. (608) *Piranga erythromelas* Vieill.—Scarlet Tanager.**

**Description:** L. 7.5; W. 4; T. 2. Male: head and body bright scarlet; wings and tail intense black. Female: upperparts olive-green; wings and tail brown; underparts yellowish.

**Season:** Migrant.

**Records:** Fayette Co. Apr.—May (W. D. F.); Eastern Kentucky (H. Garman); Nelson Co. May 2, 1916; May 12—24, 1917; May 8, 1920; May 10—13, 1921 (B. J. Blincoe); Lexington, Apr. 16, 1916; May 12, 1918; May 2, 1919, young bird (C. K. Morrell); Apr. 24, 1904; Apr. 28, 1905; Apr. 28, 1906; Apr. 28, 1907; Apr. 29, 1909; May 2, 1910; May 2, 1911; Apr. 27, 1912; May 1, 1913; May 3, 1914 (M. Didlake); Apr. 23, 1920 (W. Sams); Bowling Green, Apr. 18—May 19; Sept. 6—30 (G. Wilson); Harlan Co. Apr. 27, 1923, pair (W. D. F.).

**Remarks:**

One of the most brilliantly and distinctly marked of all American birds. Most often seen in Kentucky during the spring migration.

**186. (610) *Piranga rubra* Linn.—Summer Tanager.**

**Description:** L. 8; W. 4; T. 3. Male: entirely vermilion red,

brighter below. Female: olive-yellow above; lighter below. Nest: of twigs, bark and leaves, near the ends of horizontal limbs about 20 feet up. Eggs: 3—4, greenish-white, with many brown dots.

*Season:* Common summer resident.

*Records:* Fayette Co. May.—Sept. (W. D. F.); Lexington earliest arr. Apr. 22, 1905 (M. Didlake); eggs May 15—June 1 (H. Garman); Bowling Green, Apr. 2—Sept. 26 (G. Wilson); Nelson Co. earliest arr. Apr. 16, 1916; latest dep. Sept. 25, 1917; nest-building June 14, 1917 (B. J. Blincoe); Lee Co. Apr. 22, 1920 (W. R. Campbell).

*Remarks:*

One of our most characteristic summer birds. Feeds largely on bees, wasps and hornets.

#### Family Hirundinidae.—The Swallows.

*Characters:* Beak short and flattened, wide at base; wings when closed reaching beyond tip of tail; first primary longest; outer tail-feathers longest; tarsus sharp behind; feet very weak.

#### 187. (611) *Progne subis* Linn.—Purple Martin.

*Description:* L. 8; W. 6; T. 3. Male: entirely blue-black. Female: duller above; white streaked with gray below. Nest: of grass, strings, straw and feathers in boxes or homes provided for them. Eggs: 4—5, pure shining white.

*Season:* Abundant summer resident.

*Records:* Fayette Co. Apr.—Sept. (W. D. F.); Lexington earliest arr. Mar. 26, 1917 (C. K. Morrell); dep. Sept. 1 (H. Garman); Bowling Green, Mar. 15—Sept. 25 (G. Wilson); Ballard Co. (G. Wilson); Nelson Co. earliest arr. Mar. 24, 1920; latest dep. Sept. 6, 1915 (B. J. Blincoe); Louisville; Frankfort; Shelbyville (W. D. F.).

*Remarks:*

We have never known the martins to nest except where houses were prepared for them. They are rapidly being driven out of Kentucky by the English sparrows. This bird is said to have been a favorite with the Indians in Kentucky who hung up gourds in which they might nest.

#### 188. (612) *Petrochelidon lunifrons* Say.—Cliff Swallow.

*Description:* L. 6; W. 4.5; T. 2. Forehead white; upper-parts steel-blue except rump which is light reddish-brown; throat and sides of head chestnut; gray ring around neck; breast gray with a steel-blue patch in center; belly white. Sexes alike. Nest: bottle-shaped, of mud, under cliffs and eaves. Eggs: 3—5, white, spotted with brown.

*Season:* Summer resident; rather rare.

*Records:* Newport 1819 (Audubon); Nelson Co. May 18, 1916; May 18, 1921 (B. J. Blincoe); Lexington, May 22, 1904; Apr. 20, 1905 (M. Didlake); Bowling Green, Mar. 24—Sept. 18 (G. Wilson); Ballard Co. Aug. 7, 1916 (G. Wilson).

*Remarks:*

Formerly abundant in the State; now not often seen. Identified by the red upper tail coverts.

Mr. Victor K. Dodge states that this swallow was abundant in 1886 with its mud nests under the eaves of houses, but that he has seen none nesting since 1890, and suggests that they have been driven out by English sparrows.

#### 189. (613) *Hirundo erythrogaster* Bodd.—Barn Swallow.

*Description:* L. 7; W. 4.5; T. 3.5. Above, lustrous steel-blue; below pale chestnut; tail deeply forked with large white spots on the inner webs of all the feathers except the middle pair. Sexes alike. Nest: of mud and grass, fastened by one side to walls of barns or caves. Eggs: 3—5, white, spotted with brown.

*Season:* Abundant summer resident.

*Records:* From practically every county in the State; Fayette Co. Apr.—Sept. (W. D. F.); Lexington earliest arr. Apr. 11, 1920 (D. J. Healy); Bowling Green, Apr. 20—Sept. 17, (G. Wilson); Ballard Co. rare (G. Wilson); Nelson Co. earliest arr. Apr. 17, 1914; latest dep. Sept. 20, 1912 (B. J. Blincoe).

*Remarks:*

Our commonest and best known swallow. Feeds entirely on insects which it catches on the wing. A most valuable bird and one of our swiftest fliers.



**190. (614) *Iridoprocne bicolor* Vieill.—Tree Swallow.**

*Description:* L. 6; W. 4.5; T. 2.5. Above, bright greenish-blue; below, pure white. Sexes alike.

*Season:* Rare spring migrant.

*Records:* Bowling Green, May 1—8 (G. Wilson).

*Remarks:*

Occasionally seen on their way north.

**191. (616) *Riparia riparia* Linn.—Bank Swallow.**

*Description:* L. 5; W. 4; T. 2. Upperparts gray; underparts white with a brownish gray band across the breast. Sexes alike. Nest: a hole in a sand bank. Eggs: 4—7, pure white.

*Season:* Summer resident; rare in most parts of the State.

*Records:* Kentucky (H. Garman); Nelson Co. (C. W. Beckham); Bowling Green, Apr. 8—Sept. 6 (G. Wilson); Ballard Co. (G. Wilson); Harlan Co. Apr. 27, 1923 (V. Dodge and W. D. F.).

Nest in colonies but only in localities where suitable sand banks exist.

**192. (617) *Stelgidopteryx serripennis* Aud.—Rough-winged Swallow.**

*Description:* L. 5.5; W. 4.5; T. 2. Above, dull gray, tail dusky brown, outer web of first primary with tiny hooks; throat and breast brownish gray; belly white. Sexes alike. Nest: in holes in banks or walls. Eggs: 4—8, white.

*Season:* Summer resident.

*Records:* Nelson Co. Apr. 25, 1920; May 16, 1921 (B. J. Blincoe); Bowling Green, May 7, 1921 (G. Wilson).

*Remarks:*

Common in some parts of the State; never seen in others. There seems to be no evident explanation for its unequal distribution and erratic choice of localities. In 1885 C. W. Beckham reported this as the "most abundant of all the swallows"

in Nelson Co.; in 1922 B. J. Blincoe records it as a "fairly common migrant and rare summer resident" in the same county.

**Family Bombycillidae.—The Waxwings.**

*Characters:* Plumage soft and brownish; black band across forehead; head crested; tail tipped with yellow; secondaries with red wax-like tips. Erratic, wandering birds, almost voiceless.

**193. (618) *Bombycilla garrula* Linn.—Bohemian Waxwing.**

*Description:* L. 8; W. 4.5; T. 2.5. Crest conspicuous; forehead black; black line through eye; throat black; upperparts soft light brown; wing brown with white markings; secondaries with red waxy tips; tail tipped with yellow; breast brown; under tail coverts chestnut. Sexes alike.

*Season:* Rare winter visitant.

*Records:* Woodford Co. (Miss B. Buck).

*Remarks:*

An erratic wanderer, sometimes coming south of the Ohio River in the winter.

**194. (619) *Bombycilla cedrorum* Vieill.—Cedar Waxwing.**

*Description:* L. 7; W. 4; T. 2.5. Very similar to the preceding but smaller. Nest: of all sorts of materials in shade or fruit trees 5—25 feet up. Eggs: 3—5, bluish-gray, marked with brown or black.

*Season:* Permanent resident.

*Records:* Lexington, Feb. 22, 1916; Mar. 24, 1918 (C. K. Morrell); Feb. 7, 1904; May 7, 1907; Mar. 13, 1910; Feb. 14, 1911; May 18, 1912; Feb. 23, 1913; May 2, 1914 (M. Didlake); Mar. 24, 1918 (D. J. Healy); May 10, 1920 (W. Sams); Bowling Green, Aug. 17—June 12 (G. Wilson).

*Remarks:*

Usually found in flocks about cedars. Very erratic in their appearance. Quiet, gentle, beautiful birds.

**Family Laniidae.—The Shrikes.**

*Characters:* Powerful birds with beaks strongly hooked and notched at tip; colors grayish with white-tipped tails; tarsus with hinder edge compressed. Hawk-like in habits.

**195. (621) *Lanius borealis* Vieill.—Northern Shrike.**

*Description:* L. 10; W. 4.5; T. 4. Upperparts gray; wings and tail black; underparts white with black markings; tail tipped with white. Sexes alike.

*Season:* Rare winter visitant.

*Records:* Kentucky (Audubon and Butler).

*Remarks:*

Recognized by its prominent black and gray markings. Feeds on small birds. Is an excellent singer.

**196. (622) *Lanius ludovicianus* Linn.—Loggerhead Shrike. "Butcher Bird".**

*Description:* L. 9; W. 4; T. 4. Upperparts gray; lores deep black; black line across forehead at base of beak; wings black with secondaries tipped with white; tail black with white tip; underparts gray. Sexes alike.

*Season:* Visitant.

*Records:* Bowling Green (Miss S. F. Price); Nelson Co. (C. W. Beckham); Lexington, Apr. 28, 1918; Apr. 20, 1919 (C. K. Morrell); May 27, 1916 (M. Didlake); Jan 18, 1920 (W. Sams).

*Remarks:*

A blood-thirsty bird which perches on high points of vantage from which it swoops upon smaller birds and large insects. It is the terror of small songbirds and the deadly enemy of the English sparrow. Has the habit of impaling its prey on thorns or barbed-wire, hence the popular name of "Butcher Bird".

**197. (622c) *Lanius ludovicianus migrans* Palm.—Migrant Shrike.**

*Description:* L. 9; W. 4.5; T. 4. Very similar to preceding but with longer wings, shorter beak and paler colors. Nest: of bark, twigs and grass in low bushes. Eggs: 3—5, white, with many brown markings.

*Season:* Fairly common migrant; rare permanent resident.

*Records:* Nelson Co. Oct. 3, 1913—Apr. 5, 1914; July 16, 1914—Mar. 13, 1915; Aug. 11, 1915—Apr. 4, 1916; Aug. 21, 1916—Mar. 29, 1917; Aug. 18, 1917—Mar. 19, 1920; Aug. 1921 (B. J. Blincoe); Bowling Green, Feb. 15—Oct. 24; nests; (G. Wilson); Ballard Co., common (G. Wilson).

*Remarks:*

Habits as in the preceding.

**Family Vireonidae.—The Vireos.**

*Characters:* Tarsus with hinder edge compressed; first primary short; front of tarsus with transverse quadrangular scales; upperparts generally olive-green; beak stout, slightly hooked and notched at tip; toes united at base.

**198. (624) *Vireosylva olivacea* Linn.—Red-eyed Vireo; "Preacher".**

*Description:* L. 6; W. 3.2; T. 3. Above olive-green; crown gray with narrow black borders; white line over eye; eyes red; underparts pure white. Sexes alike. Nest: light and thin, of shredded bark, paper, hornet's nests, etc., suspended by rim to horizontal twig in trees 5—40 feet up. Eggs: 3—4, white, with a few black spots at larger end.

*Season:* Abundant summer resident.

*Records:* Fayette Co. May—Aug. (W. D. F.); Nelson Co. earliest arr. Apr. 20, 1920; latest dep. Sept. 30, 1920 (B. J. Blincoe); Lexington earliest arr. May 5, 1920 (W. Sams); May 5, 1912 (M. Didlake); May 5, 1919 (C. K. Morrell); Bowling Green, Apr. 8—Sept. 27 (G. Wilson); Ballard Co. (G. Wilson); Woodford Co. June—Aug. (W. D. F.).

*Remarks:*

Best known on account of its querulous monotonous call which is supposed to resemble a series of questions of four syllables each, each given with a rising inflection and with a pause between. Usually found among the leaves of the trees and very seldom on the ground. A very valuable insect-eater.

**199. (626) *Vireosylva philadelphica* Cass.—Philadelphia Vireo.**

*Description:* L. 5; W. 2.5; T. 2. Upperparts olive-green; crown gray with no black border; eye brown; underparts greenish-yellow. Sexes alike.

*Season:* Rare migrant.

*Records:* Nelson Co. May 19, 1877 (C. W. Beckham).

*Remarks:*

Resembles the preceding in habits and song.

**200. (627) *Vireosylva gilva* Vieill. Warbling Vireo.**

*Description:* L. 5.5; W. 2.5; T. 2. Above, pale olive-green, brighter on rump; wings and tail with distinct olive edgings; sides olive; first primary very short; below, white tinged with greenish. Sexes alike. Nest and eggs: Very like those of the red-eyed vireo but the nest is generally placed higher in the tree.

*Season:* Common summer resident.

*Records:* Fayette Co. May—July (W. D. F.); Nelson Co. May 7, 1917; May 6, 1920 (B. J. Blincoe); Lexington earliest arr. Apr. 25, 1920 (D. J. Healy and W. Sams).

*Remarks:*

An excellent singer as the popular name would imply, and a remarkable destroyer of canker-worms and other caterpillars.

**201. (628) *Lanius flavifrons* Vieill. Yellow-throated Vireo.**

*Description:* L. 5.5; W. 3; T. 2. Above, bright olive-green, with rump grayer; wing with two white bars; throat and breast bright yellow; belly white. Sexes alike. Nest: of fine bark, grass and spider-webs, covered with lichens and suspended in a fork 10—30 feet up. Eggs: 3—4, white, with a few black dots.

*Season:* Summer resident.

*Records:* Lexington, Apr. 28, 1918 (C. K. Morrell); May 14, 1905; Apr. 18, 1906; May 17, 1908 (M. Didlake); May 15, 1920 (D. J. Healy); Nelson Co. May 22, 1921; Aug. 13, 1916; Aug. 19, 1921 (B. J. Blincoe); Bowling Green, Apr. 19—Sept. 29 (G. Wilson); Ballard Co. (G. Wilson).

*Remarks:*

Always stays high in the trees. Feeds largely on beetles and their larvae.

**202. (629) *Lanius solitarius* Wils.—Blue-headed Vireo**

*Description:* L. 5.5; W. 3; T. 2. Crown and sides of head bluish-gray; eye-ring and lores white; upperparts olive-green; wing with two white bars; underparts white. Sexes alike. Nest: of bark, fibres, plant-down and pine-needles, suspended in branches of low trees and bushes. Eggs: 3—4, white, with irregular brownish markings.

*Season:* Rare summer resident.

*Records:* Henderson (Audubon); Nelson Co. Apr. 25, 1917 (B. J. Blincoe); Lexington, Apr. 15, 1916; Apr. 27, 1918 (C. K. Morrell); May 1, 1920 (D. J. Healy); Bowling Green, May 8—Nov. 4 (G. Wilson).

*Remarks:*

A bird of the deep woods. Has a beautiful full-throated song. Feeds entirely on insects while in Kentucky.

**203. (631) *Vireo griseus griseus* Bodd.—White-eyed Vireo.**

*Description:* L. 5; W. 2.5; T. 2. Upperparts olive-green; wings with two yellowish bars; eye-ring and lores yellow; yellow line from eye to nostril; breast and sides greenish-yellow; throat and belly white. Sexes alike. Nest: bag-shaped, of moss, lichens and bark, suspended from horizontal fork in low bush. Eggs: 3—5, white, speckled with brown.

*Season:* Common summer resident.

*Records:* Lexington, Apr. 19, 1918 (C. K. Correll); May 11, 1913 (M. Didlake); Nelson Co. arr. Apr. 15; eggs May 16 (C. W. Beckham); Apr. 22—Sept. 23, 1917; Apr. 14, 1918; Oct. 5, 1919; Apr. 19—Oct. 3, 1920; Apr. 13, 1921 (B. J. Blincoe); Bowling Green, Apr. 7—Oct. 10 (G. Wilson); Ballard Co. (G. Wilson); Lexington, May 13, 1923 (W. D. F.).

*Remarks:*

Usually found in thickets, undergrowths and brier-patches near water.



## Family Mniotiltidae.—The Warblers.

*Characters:* Small birds with rather bright plumage; tarsus compressed behind; beak not hooked nor notched at tip; hind claw straight and longer than its toe; feed on insects.

204. (636) *Mniotilta varia* Linn.—Black and White Warbler;  
"Black and White Creeper".

*Description:* L. 5; W. 2.7; T. 2. Male: entirely black and white in streaks; crown black with white stripe through middle; throat black; wing with two white bars; Female: duller and with throat white. Nest: of bark and grass on ground at base of tree. Eggs: 4—5, white, spotted with brown.

*Season:* Common summer resident.

*Records:* Fayette Co. Apr.—Sept. (W. D. F.); Lexington earliest arr. Apr. 6, 1903 (M. Didlake); Western Kentucky (H. Garman); Nelson Co. Apr. 12, 1920; Apr. 24, 1921, Sept. 20, 1912; Sept. 18, 1913; Oct. 8, 1916; Sept. 9, 1917; Sept. 28, 1919; Oct. 3, 1920 (B. J. Blincoe); Bowling Green, Mar. 29—Oct. 6 (G. Wilson) Ballard Co. (G. Wilson). Harlan Co. Apr. 27, 1923 (V. Dodge and W. D. F.).

*Remarks:*

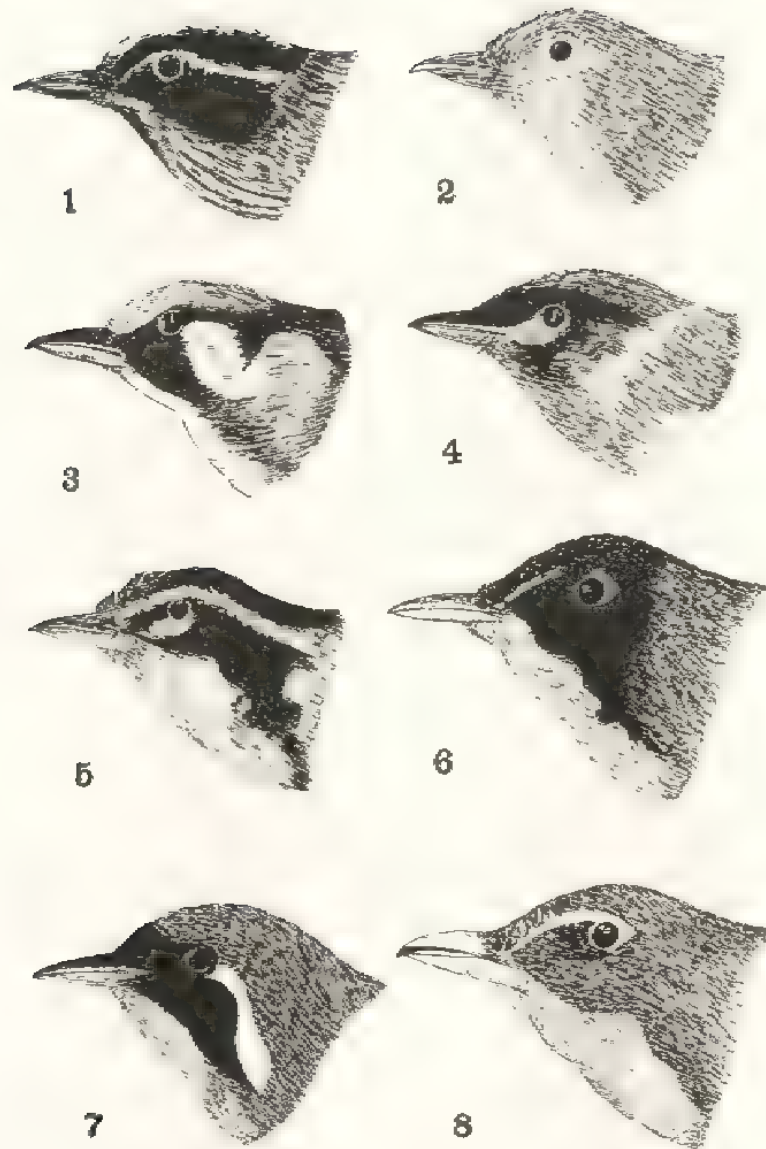
Easily distinguished by its black and white markings and by its habit of climbing on limbs and trunks like a true creeper. Its protective coloration against the bark makes it hard to see in the woods.

205. (637) *Protonotaria citrea* Bodd.—Prothonotary Warbler.

*Description:* L. 5.5; W. 3; T. 2. Male: entire head, neck, and underparts bright orange-yellow; back olive green; tail bluish gray, marked with white. Female: paler. Nest: of moss, leaves and fibers in a hole in a stump, usually willow. Eggs: 5—7, white, with brown markings.

*Season:* Summer resident.

*Records:* Midland (H. Garman); Bowling Green, Apr. 5—Sept. 28 (G. Wilson); Ballard Co. (G. Wilson); Versailles, Aug. 20—29, 1901; May 12, 1903; May 12, 1916; Aug. 31, 1915 (Mrs. L. Brodhead).



Drawings by W. W. Morris

FIG. 81  
HEADS OF WARBLERS

- |                            |                          |
|----------------------------|--------------------------|
| 1. Black and White Warbler | 5. Blackburnian Warbler  |
| 2. Yellow Warbler          | 6. Kentucky Warbler      |
| 3. Chestnut-sided Warbler  | 7. Maryland Yellowthroat |
| 4. Bay-breasted Warbler    | 8. Yellow-breasted Chat  |

*Remarks:*

This exquisitely and brilliantly colored warbler is generally found around water, especially in marshy places, and is sometimes called the "Golden Swan Warbler" for this reason.

**206. (638) *Helinaia swainsoni* Aud.—Swainson's Warbler.**

*Description:* L. 5.5; W. 3; T. 2. Upperparts entirely brown; white line over eye; underparts yellowish white. Sexes alike.

*Season:* Rare visitant.

*Records:* Bowling Green, Apr. 27, 1917 (G. Wilson).

*Remarks:*

A southern swamp warbler which rarely comes north.

**207. (639) *Helminthos vermivorus* Gmel.—Worm-eating Warbler.**

*Description:* L. 5.5; W. 2.8; T. 2. Head black with buff line through middle of crown; buff stripe over eye and black streak behind eye; upperparts olive-green; wings brown; underparts buff, lighter on throat and belly. Sexes alike.

*Season:* Spring migrant.

*Records:* Lexington, Apr. 28, 1918; Apr. 30, 1919 (C. K. Morrell); Apr. 27, 1904; Apr. 27, 1905; Apr. 28, 1907; Apr. 21, 1909; May 7, 1911; Apr. 22, 1913 (M. Didlake); May 1, 1920 (D. J. Healy); Apr. 22, 1920 (W. Sams); Nelson Co. July 11, 1920; Apr. 24, 1921 (B. J. Blincoe); Bowling Green, Apr. 3—May 9 (G. Wilson).

*Remarks:*

Breeds in Indiana but its nest has not been reported from Kentucky.

**208. (640) *Vermivora bachmani* Aud.—Bachman's Warbler.**

*Description:* L. 4.2; W. 2.5; T. 1.8. Forehead yellow; crown black; back of head gray; back and rump olive-green; lesser wing-coverts yellow; breast black; belly yellow. Sexes similar.

*Season:* Rare visitant.

*Records:* Bowling Green, May 10, 1918; Mammoth Cave, May 11, 1918 (G. Wilson); Logan Co. (Embrey).

*Remarks:*

A bird with an interesting history. It was a lost species for over fifty years.

**209. (641) *Vermivora pinus* Linn.—Blue-winged Warbler.**

*Description:* L. 5; W. 2.5; T. 2. Head bright yellow; black stripe through eye; upperparts olive-green; wings and tail blue-gray; underparts bright yellow; under tail coverts white. Sexes similar.

*Season:* Migrant.

*Records:* Lexington, Apr. 22, 1918 (C. K. Morrell); May 1, 1904; Apr. 25, 1905; Apr. 25, 1909; May 3, 1914 (M. Didlake); Barrens (Audubon); Nelson Co. May 9, 1917; May 8, 1920; May 1, 1921 (B. J. Blincoe); Bowling Green, Apr. 19—May 19; Sept. 25—Oct. 5 (G. Wilson).

*Remarks:*

A beautiful, gayly-colored bird and a great insect-eater. Prefers open woodlands.

**210. (642) *Vermivora chrysoptera* Linn.—Golden-winged Warbler.**

*Description:* L. 5; W. 2.5; T. 2. Forehead yellow; sides of head black; upperparts blue gray; wings blue-gray with large yellow patch; tail blue-gray with white markings; underparts grayish white. Sexes similar.

*Season:* Visitant.

*Records:* Lexington, May 13, 1920 (W. Sams); Nelson Co. May 11, 1877 (C. W. Beckham); Versailles, Aug. 26, 1901; Sept. 25, 1902; Sept. 14, 1912; Sept. 6, 1915 (Mrs. L. Brodhead).

*Remarks:*

One of the most beautiful of the warblers and easily identified by the yellow head and wing patches.

**211. (645) *Vermivora rubicapilla* Wils.—Nashville Warbler.**

*Description:* L. 5; W. 2.5; T. 2. Head bluish-gray with faint

reddish patch on crown; upperparts olive-green; underparts yellow. Sexes alike.

*Season:* Migrant.

*Records:* Nelson Co. (C. W. Beckham); Lexington, May 1, 1909 (M. Didlake); Bowling Green, May 1—19; Aug. 31—Oct. 1 (G. Wilson); Versailles, May 4, 1903; May 4, 1904; Sept. 22, 1911; Oct. 4, 1911; May 3—12, 1917 (Mrs. L. Brodhead).

*Remarks:*

Usually prefers the tops of trees in dense woods, but Mrs. Brodhead has observed them in her orchard.

**212. (646) *Vermivora celata* Say.—Orange-crowned Warbler.**

*Description:* L. 5; W. 2.5; T. 2. Crown with bases of feathers reddish-orange; upperparts dull olive-green; eye ring yellow; underparts greenish-yellow, streaked with dusky. Sexes similar.

*Season:* Rare visitant.

*Records:* Nelson Co. (C. W. Beckham); Versailles, Oct., 1902; Sept. 23, 1906; Sept. 25—30, 1911; May 12, 1916 (Mrs. L. Brodhead).

*Remarks:*

A rare species in this part of the United States.

**213. (647) *Vermivora peregrina* Wils.—Tennessee Warbler.**

*Description:* L. 5; W. 2.5; T. 1.5. Head and neck gray; dark stripe through eye; eye ring white; upperparts olive-green; underparts yellowish white. Sexes similar.

*Season:* Common migrant.

*Records:* East Cairo, Sept. (H. Garman); Nelson Co. Sept. 7, 1919 (B. J. Blincoe); Lexington, May 12, 1912; May 18, 1913 (M. Didlake); May 11, 1919 (D. J. Healy); May 13, 1920 (W. Sams); Bowling Green, Apr. 19—May 10; Sept. 7—Oct. 24 (G. Wilson).

*Remarks:*

Quite abundant in the fall; seldom seen in the spring.

**214. (648) *Compsothlypis americana americana* Linn.—Parula Warbler.**

*Description:* L. 5; W. 2.5; T. 1.8. Spring: upperparts blue with golden brown patch on back underparts; yellow with brown patch; wings and tail with white spots; lores black. Fall; lighter above, not so black on lores, more yellow below. Sexes similar.

*Season:* Migrant.

*Records:* Lexington, May 5, 1908; May 5, 1912 (M. Didlake); Nelson Co. (C. W. Beckham); Torrent, July, 1900; Woodburn, Aug. 9, 31, 1915 (Mrs. L. Brodhead).

*Remarks:*

According to Beckham, this species formerly bred in Nelson County.

**215. (648a) *Compsothlypis americana usnea* Brewst.—Northern Parula Warbler.**

*Description:* Similar to the preceding but slightly larger, with a shorter beak, the back patch greenish-yellow, and with a distinct black band across the breast.

*Season:* Migrant.

*Records:* Bowling Green, May 3—19 (G. Wilson).

*Remarks:*

Their habitat is dense woods where they prefer the higher tree-tops.

**216. (650) *Dendroica tigrina* Gmel.—Cape May Warbler.**

*Description:* L. 5; W. 2.5; T. 2. Beak very sharp, conical and curved. Crown black; auriculars yellow; back olive-green; rump yellow; white patch on wing and white blotches on tail; underparts yellow streaked with black. Sexes similar.

*Season:* Migrant.

*Records:* Lexington, May 11, 1919 (C. K. Morrell); May 12, 1912; May 8, 1913 (M. Didlake); May 11, 1919 (D. J. Healy); May 9, 1920 (W. Sams); Nelson Co. Apr. 25—26, 1919 (B. J. Blincoe); Bowling Green, Apr. 19—May 13, Sept. 17—Oct. 24 (G. Wilson); Lexington, May 10, 1923 (W. R. Allen).



*Remarks:*

Very common some years and then not seen for several years in many parts of the State.

**217. (652) *Dendroica aestiva* Gmel.—Yellow Warbler.**

*Description:* L. 5; W. 2.5; T. 2. Male: entirely yellow with greenish tinge on back, and dusky on wings and tail; breast and belly broadly striped with orange-brown. Female: paler and with no stripes on underparts. Nest: of grasses, fibers and hair, in low crotch of bush or tree. Eggs: 4—5, bluish-white, spotted with brown.

*Season:* Common summer resident.

*Records:* Fayette Co. Apr.—July (W. D. F.); Nelson Co. earliest arr. Apr. 16, 1912; last heard singing July 27, 1917 (B. J. Blincoe); Lexington earliest arr. Apr. 14, 1906 (M. Didlake); Bowling Green, Apr. 13—Aug. 8 (G. Wilson); Ballard Co. (G. Wilson) Woodford Co. July (W. D. F.).

*Remarks:*

The most easily recognized and one of the commonest of our warblers. One of the few warblers that remain with us all summer.

**218. (---) *Dendroica carbonata* Aud.**

A lost species. Described by Audubon from two immature males and has never been seen since.

*Record:* Henderson, May, 1811 (Audubon).

**219. (654) *Dendroica caerulescens* Gmel.—Black-throated Blue Warbler.**

*Description:* L. 5; W. 2.5; T. 2. Male: upperparts dull blue; sides of head, chin, and throat black; breast and belly pure white; wings dusky blue with prominent white patch; tail with white spots. Female: upperparts olive-green; underparts yellow; patch on wing smaller; no white on tail.

*Season:* Migrant.

*Records:* Lexington, May 3, 1904; May 6, 1907; May 13, 1910; May 14, 1911; May 18, 1913; May 3, 1914 (M. Didlake);

May 15, 1920 (D. J. Healy); Nelson Co. May 6, 1917; May 8, 1920; Sept. 5, 1920 (B. J. Blincoe); Bowling Green, May 7—13; Sept. 22—Oct. 7 (G. Wilson); Harlan Co. Apr. 27, 1923 (W. D. F.).

*Remarks:*

Males easily recognized but females hard to identify on account of their entirely different appearance.

**220. (655) *Dendroica coronata* Linn.—Myrtle Warbler.**

*Description:* L. 5.5; W. 2.7; T. 2.2. Crown yellow; upperparts blue-gray, streaked with black; rump yellow; wings with two white bars; tail with white markings; underparts blue-gray with a yellow spot on each side of breast. Sexes similar but female duller.

*Season:* Common winter resident.

*Records:* Fayette Co. Dec.—May (W. D. F.); Bardstown Oct. 10—May 8 (C. W. Beekham); Nelson Co. Oct. 7, 1913; Oct. 8, 1916; Oct. 14, 1917; Oct. 13, 1919; Oct. 18, 1920; May 7, 1916; May 13, 1917; May 8, 1920; May 2, 1921 (B. J. Blincoe); Lexington, Apr. 20, 1916; Apr. 28, 1918; May 4, 1919 (C. K. Morrell); May 14, 1912 (M. Didlake); May 4, 1919 (D. J. Healy); May 8, 1920 (W. Sams); Bowling Green, Sept. 5—May 19 (G. Wilson); Ballard Co. Sept. 12, 1917 (G. Wilson).

*Remarks:*

Generally found in evergreens.

**221. (657) *Dendroica magnolia* Wils.—Magnolia Warbler; Black and Yellow Warbler.**

*Description:* L. 5; W. 2.3; T. 2. Crown blue-gray; forehead and sides of head black; lower eyelid white; throat yellow; back black, marked with olive; rump yellow; wing with white bars; tail with white spots; underparts yellow with black streaks. Sexes similar.

*Season:* Migrant.

*Records:* Lexington, May 10, 1916; Apr. 28, 1918; May 10, 1919 (C. K. Morrell); May 3, 1903; May 5, 1904; May 11, 1906; May 12, 1907; Apr. 29, 1909; May 14, 1910; May 3, 1911; May 5, 1912; May 18, 1913; May 16, 1914 (M. Didlake); May 11, 1919 (D. J. Healy); May 13, 1920 (W. Sams); Bowling Green, Apr. 19—May 17;

Oct. 13 (G. Wilson); Nelson Co. May 6—29, 1917; May 18—24, 1921; Sept. 7—28, 1919; Sept. 3—Oct. 3, 1920 (B. J. Blincoe).

**Remarks:**

A beautifully marked bird, generally seen in second growth timber and in thickets. Prefers low trees.

**222. (658) Dendroica cerulea Wils.—Cerulean Warbler.**

**Description:** L. 4.5; W. 2.5; T. 2. Upperparts bright blue; two white wing bars; tail with small white spots at tip; underparts white with a bluish band across breast. Sexes similar. Nest: of grass, fibers, lichens, and spider-webs, on horizontal limb 20—50 feet up. Eggs: 4—5, whitish, spotted with brown.

**Season:** Summer resident

**Records:** Lexington, Apr. 27, 1906; Apr. 26, 1909; Apr. 30, 1913 (M. Didlake); Nelson Co. Apr. 27, 1920; Apr. 24—Aug. 19, 1921 (B. J. Blincoe); Woodford Co. July; Anderson Co. July (W. D. F.).

**Remarks:**

Usually found in dense forests where they stay in the tops of the highest trees.

**223. (659) Dendroica pennsylvanica Linn.—Chestnut-sided Warbler.**

**Description:** L. 5; W. 2.5; T. 2. Crown yellow; black line behind eye; lores black; auriculars white; upperparts greenish, streaked with black; sides rich chestnut; wings with white bars; underparts yellowish-white. Sexes similar

**Season:** Migrant.

**Records:** Lexington, May 5, 1916 (C. K. Morrell); May 1, 1903; May 7, 1904; May 6, 1905; May 2, 1907; May 12, 1909; May 14, 1910; May 14, 1911; May 2, 1912 (M. Didlake); May 6, 1920 (W. Sams); Bowling Green, Apr. 18—May 11 (G. Wilson); Nelson Co. May 7, Oct. 10 (C. W. Beckham).

**Remarks:**

To be looked for at the edge of timber.

**224. (660) Dendroica castanea Wils.—Bay-breasted Warbler.**

**Description:** L. 5.5; W. 3; T. 2.2. Male: crown chestnut; forehead and sides of head black; upperparts olive-gray, streaked with black; wings with white bars; tail tipped with white at outer edge; throat and breast bright chestnut; belly white. Female: crown olive, streaked with black; very little chestnut on breast.

**Season:** Migrant.

**Records:** East Cairo, Sept. (H. Garman); Nelson Co. May 18, 1921 (B. J. Blincoe); Lexington, May 12, 1918; May 11, 1919 (C. K. Morrell); May 4, 1905; May 12, 1907; May 13, 1910; May 2, 1911; May 5, 1912; May 8, 1913 (M. Didlake); May 11, 1919 (D. J. Healy); May 13, 1920 (W. Sams); Bowling Green, May 3—19; Sept. 28—Oct. 6 (G. Wilson).

**Remarks:**

Prefers the low branches of trees in open woods and at the edge of timber.

**225. (661) Dendroica striata Forst.—Black-poll Warbler.**

**Description:** L. 5.5; W. 3; T. 2. Male: crown black; auriculars white; upperparts gray, streaked with black; wings with two white bars; underparts white, the throat streaked with black. Female: above, olive-green streaked with black; below yellowish

**Season:** Migrant.

**Records:** East Cairo, Sept. (H. Garman); Nelson Co. Apr. 25, 1914 (B. J. Blincoe); Lexington, May 19, 1919 (C. K. Morrell); May 13, 1920 (W. Sams); Bowling Green, May 5—22; Sept. 17—Oct. 3 (G. Wilson); Lexington, May 8, 1923 (W. R. Allen).

**Remarks:**

There usually seem to be many more males than females in the migration through Kentucky.

**226. (662) Dendroica fusca Mull.—Blackburnian Warbler.**

**Description:** L. 5; W. 2.5; T. 2. Male: upperparts, wings and tail, black; wing patch white; crown patch, line over eye, throat, and breast, fiery orange. Female: upper-

parts olive-gray, streaked with black; less orange and white.

*Season:* Migrant.

*Records:* Lexington, May 22, 1916; May 24, 1919 (C. K. Morrell); May 1, 1903; Apr. 14, 1905; May 14, 1910; May May 2, 1911; May 5, 1912; May 1, 1913; May 3, 1914 (M. Didlake); May 9, 1920 (D. J. Healy); May 10, 1920 (W. Sams); Bowling Green, Apr. 25—May 13; Sept. 8—Oct. 8 (G. Wilson); Nelson Co. May 7, 1920; May 13—14, 1921; Sept. 5—Oct. 7, 1920 (B. J. Blincoe).

*Remarks:*

Always attracts attention on account of its gorgeous plumage.

**227. (663) *Dendroica dominica dominica* Linn.—Yellow throated Warbler.**

*Description:* L. 5; W. 2.5; T. 2. Forehead black; yellow line in front of eye; white line over eye; sides of head and throat black; upperparts gray; two white wing bars; throat and breast bright yellow; belly white. Sexes similar.

*Season:* Visitant.

*Records:* Midland, Apr. (H. Garman); Woodford Co. Oct. 11, 1905, large flock (Mrs. L. Brodhead).

*Remarks:*

Often confused with the Sycamore Warbler which it much resembles. The flock recorded by Mrs. Brodhead appeared in the yard of her estate "Okalee" after a heavy storm. They were quite hungry and flew on to the porch where they were distinctly observed.

**228. (663a) *Dendroica dominica albilora* Ridgw.—Sycamore Warbler.**

*Description:* Very similar to preceding but has the lores white instead of yellow. Nest: on fork far out on a limb, usually of a sycamore. Eggs: 4—5, gray with dark markings.

*Season:* Uncommon summer resident.

*Records:* Nelson Co. Apr. 11, 1920; Mar. 27, 1921; Oct. 4, 1916; Sept. 21, 1919 (B. J. Blincoe); Bowling Green, Mar. 27—Oct. 7, nests (G. Wilson).

*Remarks:*

Almost always found in sycamores.

**229. (667) *Dendroica virens* Gmel.—Black-throated Green Warbler.**

*Description:* L. 5; W. 2.5; T. 2. Upperparts bright olive-green; sides of head bright yellow; two white wing bars; throat and breast black; belly white. Sexes similar.

*Season:* Migrant.

*Records:* Lexington, Apr. 29, 1916; May 2, 1919 (C. K. Morrell); Apr. 13, 1903; Mar. 31, 1904; Apr. 27, 1905; Apr. 13, 1906; Apr. 21, 1907; Apr. 21, 1909; May 12, 1911; May 15, 1913; Apr. 22, 1914 (M. Didlake); May 2, 1920 (W. Sams); Bowling Green, Apr. 23—May 14; Sept. 7—Oct. 16 (G. Wilson); Ballard Co. (G. Wilson); Nelson Co. Apr. 30, 1916; May 4, 1920; May 10—18, 1921; Sept. 20—Oct. 12, 1912; Sept. 21—Oct. 5, 1913; Sept. 24—Oct. 7, 1915; Sept. 17—Oct. 11, 1916; Sept. 16—Oct. 7, 1917; Sept. 21—Oct. 17, 1919; Sept. 5—Oct. 10, 1920 (B. J. Blincoe); Lexington, Apr. 30, 1923 (W. R. Allen).

*Remarks:*

Frequent all kinds of woodlands

**230. (670) *Dendroica kirtlandi* Baird.—Kirtland's Warbler.**

*Description:* L. 6; W. 3; T. 2.5. Upperparts blue-gray, spotted and streaked with black; lores and sides of throat black; no wing bars; underparts bright yellow. Sexes similar.

*Season:* Rare migrant

*Records:* Bowling Green, May 7—19; Sept. 28 (G. Wilson).

*Remarks:*

The rarest of North American warblers. It is a lucky bird-student who sees one.

**231. (671) *Dendroica vigorsii* Aud.—Pine Warbler.**

*Description:* L. 5.5; W. 2.8; T. 2.2. Male: upperparts olive-



green; two white wing-bars; tail with white spots on outer tips; throat and breast bright yellow; belly white. Female: gray above and less yellow below.

*Season:* Migrant.

*Records:* Nelson Co. Apr.—Sept. (C. W. Beckham); Lexington, May 4, 1905; May 2, 1907; May 1, 1909; May 12, 1912; May 3, 1914 (M. Didlake); May 13, 1920 (W. Sams); Bowling Green, Apr. 19—May 13; Sept. 11—Oct. 17 (G. Wilson); Harlan Co. Apr. 27, 1923 (W. D. F.).

*Remarks:*

Prefers pines, as the popular name would imply, but is often seen in other trees. It often creeps about over the bark searching for insects and is sometimes called, for this reason, the Pine-creeping Warbler.

**232. (672) *Dendroica palmarum* Gmel.—Palm Warbler; Red-poll Warbler.**

*Description:* L. 5; W. 2.5; T. 2. Crown chestnut; yellow stripe over eye; back olive-brown; rump greenish; tail black; no wing-bars; sides reddish-brown; breast yellowish; belly white. Sexes alike.

*Season:* Common migrant.

*Records:* Lexington (H. Garman); Nelson Co. Apr. 23—30, 1913; Apr. 17, 1916; Apr. 19, 1917; Apr. 20, 1918; Apr. 19—May 13, 1920; Apr. 23—May 8, 1921; Oct. 4, 1916; Oct. 17—Nov. 8, 1919; Sept. 28—Dec. 30, 1920 (B. J. Blincoe); Bowling Green, Apr. 19—May 13; Sept. 7—30 (G. Wilson).

*Remarks:*

Very active and often catches insects on the wing. Is sometimes seen in Kentucky in the winter.

**233. (673) *Dendroica discolor* Vieill.—Prairie Warbler.**

*Description:* L. 5; W. 2.3; T. 2. Forehead and line over eye yellow; black line through eye and black crescent below eye; upperparts olive-green, spotted with bright chestnut; wing-bars yellowish; sides streaked with black; underparts yellow. Sexes similar.

*Season:* Usually a migrant; a summer resident in some parts of the State.

*Records:* Lexington, May 23, 1920 (W. Sams); Nelson Co. Apr. 23—Aug. 19, 1916; Apr. 22—Sept. 9, 1917; Apr. 21—Sept. 5, 1920; Sept. 7, 1919; Apr. 13, 1921; eggs about two-thirds incubated May 27, 1921; young about one day old June 1, 1916 (B. J. Blincoe); Bowling Green, Apr. 6—Oct. 15 (G. Wilson).

*Remarks:*

Frequents bushy fields, scrub-growth woodlands, and thick ets.

**234. (674) *Seiurus aurocapillus* Linn.—Oven-Bird; "Golden-crowned Thrush".**

*Description:* L. 6; W. 3; T. 2. 2. Crown orange-brown, bordered with two black stripes; eye-ring white; upperparts, wings, and tail bright olive-green; no wing or tail patches; underparts pure white, the throat and breast streaked with black. Sexes alike. Nest: dome-covered, oven-shaped structure of stalks and grass on the ground. Eggs: 3—6, creamy-white, marked with reddish-brown.

*Season:* Common migrant and rare summer resident.

*Records:* Lexington, Apr. 28, 1917; May 12, 1918; Apr. 30, 1919 (C. K. Morrell); Apr. 16, 1903; Apr. 23, 1904; Apr. 22, 1905; Apr. 13, 1906; May 7, 1907; Apr. 29, 1909; May 10, 1910; May 2, 1911; May 5, 1912; May 18, 1913; Apr. 26, 1914 (M. Didlake); Apr. 21, 1920 (W. Sams); Woodford Co. June, 1921 (W. D. F.); Bowling Green, Apr. 10—Oct. 12 (G. Wilson); Nelson Co. Oct. 6, 1912; Oct. 1, 1916; Sept. 21, 1919; Sept. 4, 1920 (B. J. Blincoe).

*Remarks:*

Called the "oven-bird" on account of its peculiar nest as described above. Best known for its call which is supposed to resemble the words "teacher, teacher, teacher, teacher, teacher" each one louder than the one before.

**235. (675) *Seiurus noveboracensis* Gmel.—Water-thrush; Water Wagtail.**

*Description:* L. 6; W. 3. T. 2.3. Upperparts, wings and tail entirely olive with no wing or tail markings; underparts

pale yellow with large irregular brown markings. Sexes alike.

*Season:* Migrant.

*Records:* Fayette Co. Apr., 1921 (W. D. F.); Nelson Co. Sept. 21, 1919; May 12, 13, 1921 (B. J. Blincoe); Bowling Green, Apr. 27—May 8; Sept. 4—Oct. 8 (G. Wilson); Woodford Co. Oct. 5, 1910 (Mrs. L. Brodhead); Kentucky River, Apr. 16, 1920 (L. Giovannoli).

*Remarks:*

Seldom found far from water. This fact, and the thrush-like breast, suggest the popular name. Its peculiar habit of bowing its head and lifting its tail at the same time has given it the name of "wag-tail"

**236. (676) *Seiurus motacilla* Vieill.—Louisiana Water-thrush.**

*Description:* L. 6.3; W. 3.3; T. 2.2. Similar to preceding but with a conspicuous white line over the eye and no markings on middle of breast or belly. Sexes alike. Nest: of partly rotted leaves and grass under banks or roots. Eggs: 4—6, sordid white, with brown marks at larger end.

*Season:* Summer resident.

*Records:* Valley View, Aug., 1921 (W. D. F.); Nelson Co. earliest arr. Mar. 20, 1921; latest dep. Sept. 28, 1920; (B. J. Blincoe); Bowling Green, Apr. 25—May 24; Aug. 19—Oct. 18 (G. Wilson); Ballard Co. (G. Wilson).

*Remarks:*

Found only in those parts of the State which have suitable ponds and streams, but in some localities is very abundant.

**237. (677) *Oporornis formosus* Wils.—Kentucky Warbler.**

*Description:* L. 5.5; W. 2.5; T. 2. Crown and sides of head and neck black; yellow stripe from beak extending over and behind eye; upperparts, wings and tail olive-green; no wing-bars or tail patches; underparts bright yellow. Sexes similar. Nest: of leaves, on ground or in low bushes. Eggs: 4—5, white, speckled with brown.

*Season:* Common summer resident.

*Records:* Lexington, May 1, 1919 (C. K. Morrell); May 7,

1904; Apr. 25, 1906; Apr. 27, 1912; Apr. 26, 1914 (M. Didlake); May 23, 1920 (D. J. Healy); Apr. 21, 1920 (W. Sams); Nelson Co. earliest arr. Apr. 22, 1917; latest dep. Sept. 28, 1920 (B. J. Blincoe); Bowling Green, Apr. 21—Aug. 20 (G. Wilson); Ballard Co. Aug. 23, 1918 (B. Wilson); Woodford Co. July—Aug. (W. D. F.); Harlan Co. Apr. 27, 1923 (V. Dodge and W. D. F.).

*Remarks:*

A handsome and characteristic Kentucky bird. Generally stays close to the ground in rather dense, wet woods.

**238. (678) *Oporornis agilis* Wils.—Connecticut Warbler.**

*Description:* L. 6; W. 3; T. 2. Male: head, neck and breast blue-gray; eye-ring white; upperparts, wings and tail olive-green without markings; underparts yellow. Female: throat and breast brownish.

*Season:* Rather rare migrant.

*Records:* Nelson Co. May 12; Oct. 11 (C. W. Beckham); Bowling Green, Apr. 21—May 14; Oct. 8 (G. Wilson); Lexington, Apr. 17, 1921 (W. Sams); Woodford Co. Sept. 14—23, 1914, flock of five or six; Woodburn, May 24, 1917 (Mrs. L. Brodhead).

*Remarks:*

Not often seen in this State. Frequents swampy regions and has a call much like that of the Oven-bird.

**239. (679) *Oporornis philadelphia* Wils.—Mourning Warbler; Philadelphia Warbler.**

*Description:* L. 5.5; W. 2.5; T. 2. Head, neck and throat dark blue-gray; a black spot in front of eye; upperparts, wings and tail olive-green with no markings; throat and breast black; belly yellow. Sexes similar.

*Season:* Migrant.

*Records:* Lexington, May 13, 1920 (W. Sams); Nelson Co. May 20, 1917; May 18, 1920 (B. J. Blincoe); Bowling Green, Apr. 20—May 20; Sept. 19—Oct. 2 (G. Wilson).

*Remarks:*

The name "mourning warbler" is suggested by the dark

plumage on the head and neck, like a widow's veil. The specific name is due to the fact that Wilson first saw it near Philadelphia. It is not common in Kentucky.

**240. (681) *Geothlypis trichas* Linn.—Maryland Yellow-throat.**

**Description:** L. 5; W. 2; T. 2. Male: upperparts, wings and tail olive-green without markings; a broad black mask across front of face and extending to behind auriculars, this band bordered with white. Female: no black mask; yellow parts not so bright. Nest: of grass, leaves and hair in low bushes. Eggs: 3—6, white, speckled with brown.

**Season:** Abundant summer resident.

**Records:** Fayette Co. Apr.—Sept. (W. D. F.); Nelson Co. earliest arr. Apr. 27, 1914; latest dep. Oct. 5, 1919 (B. J. Blincoe); Lexington earliest arr. Apr. 14, 1912 (M. Didlake); Bowling Green, Apr. 14—Oct. 29 (G. Wilson); Ballard Co. (G. Wilson).

**Remarks:**

Nervous, active, impatient little birds, whose movements suggest those of wrens. The call of the Maryland Yellow-throat is very distinctive and resembles the syllables "wichity, wichity, wichity". It is usually abundant in the neighborhood of streams.

**241. (683) *Icteria virens* Linn.—Yellow-breasted Chat.**

**Description:** L. 7.5; W. 3; T. 3. Upperparts, wings and tail olive-green; eye-ring and lores white; underparts bright yellow, lighter on lower belly. Sexes alike. Nest: of coarse grass, leaves and bark in low bushes and saplings. Eggs: 3—5, white, evenly speckled with brown.

**Season:** Very common summer resident.

**Records:** Fayette Co. May—Sept. (W. D. F.); Nelson Co. earliest arr. Apr. 27, 1914; latest dep. Sept. 10, 1915; four fresh eggs May 24, 1921; four eggs advanced in incubation May 29, 1921 (B. J. Blincoe); Lexington earliest arr. Apr. 24, 1903 (M. Didlake); May 1, 1920 (W. Sams); Bowling Green, Apr. 20—Sept. 23 (G. Wilson); Ballard Co. (G. Wilson); Woodford Co.; Anderson Co.; Jessamine Co.; Bell Co. (W. D. F.).

**Remarks:**

The largest of the warblers and one of our best-known birds. Erratic and rollicking in action and with a medley of calls. Neltje Blanchan says that it "might be mistaken for a dozen birds collectively in as many minutes; but when it is known that the jumble of whistles, parts of songs, chuckles, clucks, barks, quacks, whines, and wails, proceed from a single throat, the yellow-breasted chat becomes a marked specimen forthwith—a conspicuous individual never to be confused with any other member of the feathered tribe".

It is an excellent ventriloquist and a fine mimic. Inquisitive, audacious, noisy, scolding, it is nevertheless a very beneficial bird and we are fortunate in having them with us each summer in large numbers.

**242. (684) *Wilsonia citrina* Gmel.—Hooded Warbler.**

**Description:** L. 5.5; W. 2.5; T. 2.2. Male; head, neck and throat deep black; forehead and sides of head yellow; upperparts, wings and tail olive-green; outer tail-feathers marked with white; belly yellow. Female: similar but with less black on head.

**Season:** Migrant.

**Records:** Lexington, Apr. 20, 1917; Apr. 24, 1918; Apr. 30, 1919 (C. K. Morrell); Apr. 23, 1904; Apr. 21, 1905; Apr. 25, 1906; May 7, 1907; Apr. 25, 1909; May 13, 1911; Apr. 15, 1912; Apr. 22, 1914; Apr. 25, 1915 (M. Didlake); Apr. 21, 1920 (W. Sams); Nelson Co. Apr. 30, 1920 (B. J. Blincoe); Bowling Green, Apr. 13—June 6; Aug. 20—Oct. 15 (G. Wilson).

**Remarks:**

The yellow face looking out from the velvet-black hood at once suggests the popular name.

**243. (685) *Wilsonia pusilla* Wils.—Wilson's Warbler; Black-capped Yellow Warbler.**

**Description:** L. 5; W. 2.2; T. 2. Male: crown black; yellow stripe across forehead and over eye; upperparts, wings and tail bright olive-green without markings; underparts bright yellow. Female: no black on crown.



*Season:* Migrant.

*Records:* East Cairo, Sept. (H. Garman); Nelson Co., May (C. W. Beckham); Lexington, May 11, 1919 (C. K. Morrell); May 7, 1905 (M. Didlake); Bowling Green, Apr. 18—May 13; Sept. 6—29 (G. Wilson).

*Remarks:*

A wonderful insect-eater and like the Flycatchers can capture its prey on the wing.

**244. (686) *Wilsonia canadensis* Linn.—Canadian Warbler.**

*Description:* L. 5.5; W. 2.5; T. 2.2. Forehead and crown gray, spotted with black; lores and eye-ring yellow; upperparts, wings and tail gray, without markings; a row of round black spots across the breast; underparts yellow. Sexes similar.

*Season:* Migrant; not common.

*Records:* Lexington, May 7, 1904; May 4, 1905; May 2, 1909 (M. Didlake); May 13, 1920 (W. Sams); Nelson Co. May 18, 1921 (B. J. Blincoe); Bowling Green, Apr. 28—May 16; Sept. 17—25 (G. Wilson).

*Remarks:*

To be found in thickets and at the edges of woods.

**245. (687) *Setophaga ruticilla* Linn.—Redstart.**

*Description:* L. 5.5; W. 2.5; T. 2.3. Male: upperparts, head and throat lustrous black; bases of wing-feathers red, ends black; sides of breast and flanks salmon-red; belly white, tinged with salmon. Female: dull yellow where the male is salmon. Nest: of fine grass, stems and fibers in forks of small trees 6—20 feet up. Eggs: 4—5, bluish-white, spotted with brown.

*Season:* Common summer resident

*Records:* Fayette Co. May—Sept. (W. D. F.); Nelson Co. Apr. 23—Sept. 27; eggs May 27, (C. W. Beckham); May 6, 1917; May 13, 1920; latest dep. Oct. 3, 1920 (B. J. Blincoe); Lexington earliest arr. Apr. 25, 1905 (M. Didlake); May 3, 1919 (D. J. Healy); Bowling Green, Apr. 4—Sept. 30 (G. Wilson); Ballard Co. (G. Wilson); Harlan Co. Apr. 27, 1923 (W. D. F.).

*Remarks:*

An active, brilliantly colored bird which shows a flash of red when it flies and thus is well described by its popular name. We have found it most often at the edges of timber.

**Family Motacillidae.—The Wagtails.**

*Characters:* Tarsus with hind edge compressed; nine primaries; beak not hooked at tip; hind claw longer than its toe and nearly straight; tertials long; first three primaries of equal length; no bristles over nostrils.

**246. (697) *Anthus rubescens* Tuns.—American Pipit.**

*Description:* L. 6.5; W. 3.5; T. 2.5. Upperparts olive-brown with dusky markings; wings dusky with lighter edges; tail dark brown with outer feathers white; underparts buff, streaked with brown. Sexes alike.

*Season:* Migrant.

*Records:* Nelson Co. Oct. 26, 1917; Nov. 15, 1916; Oct. 29, 1919; Nov. 5, 1920; Apr. 16, 1920; Mar. 19, 1921; Apr. 30, 1918 (B. J. Blincoe); Bowling Green, Apr. 6, 1912; May 1, 1920; Apr. 23, 1921 (G. Wilson).

*Remarks:*

The only member of the family in Kentucky. One of the few birds in North America which sings on the wing like the English Skylark.

**Family Mimidae.—The Thrashers.**

*Characters:* Tarsus scaled and with hind edge compressed; ten primaries with the first only half as long as the third which is the longest; nasal feathers not covering nostrils; tail rounded, the outer feathers much shorter than the inner. Excellent singers and mimics.

**247. (703) *Mimus polyglottos* Linn.—Mockingbird.**

*Description:* L. 10.5; W. 4.5; T. 5. Upperparts gray; wings brown with white markings; tail dark brown with some white on outer feathers; underparts dirty white. Sexes alike. Nest: of coarse weeds, grass and twigs in thickets and orchards. Eggs: 4—6, pale greenish-blue, blotched with brown.

**Season:** Common summer resident and occasional permanent resident.

**Records:** By counties—Ballard (E. A. Whalin); Barren (J. O. Horning); Bath (C. F. Martin); Bell (R. H. Shipp); Boone (W. D. Sutton); Bracken (P. J. Arnold); Breathitt (G. W. Thompson); Bullitt (J. H. Sanders); Butler (F. H. Spiekard); Calloway (J. B. Gardner); Campbell (A. B. Regenstein, H. F. Lusk); Carlisle (B. A. Hensley); Carroll (G. C. Routt); Casey (W. B. Moser); Clay (L. A. Clark); Clinton (W. M. Watkins); Cumberland (C. S. Payne); Daviess (H. S. Berry); Edmonson (W. G. Bullinger); Elliott (H. H. Mayse); Fayette, throughout the year in most years; winter records, Jan. 23, 1916; (C. K. Morrell); Jan. 9, 1910 (M. Didlake); Nov. 26, 1920 (W. Sams); Dec., 1921; Jan., 1922 (W. D. F.); Fleming (H. F. McKenney); Gallatin (F. Irwin); Graves (B. H. Mitchell); Grayson (J. S. Hughes); Green (J. A. Howard); Hart (J. S. Pullen); Henderson (D. W. Martin); Henry (L. S. Rhoades); Hickman (L. Jackson); Hopkins (M. M. Gordon); Kenton (C. A. Wicklund); Knott (A. Campbell); Knox (E. Mayhew); LaRue (J. W. Jones); Leslie (M. O. Fairchild); Lincoln (C. B. Elston); Livingston (J. L. Smith); Logan (W. B. Whitlow); McCracken (J. R. Bird); MeLean (R. H. Ford); Marion (H. J. Childers); Marshall (G. O. Basham); Morgan (R. B. Rankin); Muhlenberg (F. O. Townes); Nelson (B. J. Blincoe, C. L. Hill); Ohio (J. S. Hughes); Oldham (G. B. Nance); Owen (D. P. Morris); Owsley (P. M. Frye); Pike (W. M. Wesley); Pulaski (W. C. Wilson); Taylor (J. L. Miller); Union (A. M. Allen); Warren (G. Wilson); Washington (R. M. Heath); Webster (L. E. Cutler); Woodford (W. D. F.); Wolfe (W. R. Sebastian).

**Remarks:**

Probably the most famous bird in the United States on account of its place in song and story. It is certainly one of our finest singers and is a wonderful mimic. Mr. L. M. Loomis is quoted as having heard a mocking bird imitate the songs of thirty-two species of birds in ten minutes. The mocking-bird is very abundant in most parts of Kentucky.

**248. (704) *Dumetella carolinensis* Linn.—Catbird.**

**Description:** L. 9; W. 3.5; T. 4. Crown black; upperparts slate-color; tail black; under tail coverts chestnut; wing

almost as long as tail; underparts slate gray. Sexes alike. Nest: of grass, strings, rags, twigs and leaves, in bushes or low in trees. Eggs: 3—5, bluish-green.

**Season:** Abundant summer resident

**Records:** From every county in the State. Fayette Co. Apr.—Nov. (W. D. F.); Nelson Co. earliest arr. Apr. 19, 1921; latest dep. Oct. 10, 1920; four fresh eggs May 16, 1916, five fresh eggs May 11, 1921; young leaving nest June 30, 1921 (B. J. Blincoe); Lexington earliest arr. Apr. 16, 1916 (C. K. Morrell); Apr. 18, 1922 (Mrs. W. D. Funkhouser); Bowling Green, Apr. 14—Oct. 25 (G. Wilson); Harlan Co. Apr. 27, 1923 (V. Dodge and W. D. F.).

**Remarks:**

Although its best known call is the familiar imitation of a cat, which gives it its popular name, it is a really excellent singer when it chooses to perform. In addition, it has a famous "whispering song", very faint and low and usually heard only in the late fall. It is one of the most intelligent of our songbirds and is quite at home in cities and towns. Like the mockingbird, it is an excellent mimic of other birds and is much given to droll pranks and ridiculous actions. It is a very active, alert, and restless bird, but is very friendly and apparently enjoys human society.

**249. (705) *Toxostoma rufum* Linn.—Brown Thrasher.**

**Description:** L. 11.5; W. 4; T. 5. Upperparts, wings and tail reddish-brown; wings with two white bars; throat white; breast and belly white, streaked with dark brown. Sexes alike. Nest: of sticks, leaves and grass, in low bushes or sometimes on the ground. Eggs: 4—5, grayish-white, speckled with brown.

**Season:** Common summer resident.

**Records:** Fayette Co. Apr.—Oct. (W. D. F.); Lexington earliest arr. Mar. 25, 1917 (C. K. Morrell); Bowling Green, Mar. 5—Oct. 13 (G. Wilson); Ballard Co. (G. Wilson); Nelson Co. earliest arr. Mar. 6, 1917; latest dep. Oct. 13, 1919; 3 fresh eggs May 8, 1921; 4 eggs half incubated June 12, 1921 (B. J. Blincoe).

*Remarks:*

Sometimes erroneously called the "Brown Thrush". Usually found in hedges and shrubbery. An active, suspicious bird which resents familiarity and will fight savagely to defend its nest against intruders. An excellent singer and a valuable bird. We found one specimen with its stomach entirely full of the larvae of potato-beetles.

**Family Troglodytidae.—The Wrens.**

*Characters:* Closely related to the preceding family but much smaller; no bristles at base of mandibles; third or fourth primary longest; have habit of keeping the tail erected. Excellent singers.

**250. (718) *Thryothorus ludovicianus* Lath.—Carolina Wren.**

*Description:* L. 6; W. 2.5; T. 2. Upperparts bright reddish-brown; white line over eye; wings and tail reddish-brown with dusky bars; throat white; breast and belly yellow-white. Sexes alike. Nest: of grass, straw, moss and feathers, in holes in logs or stumps or in crevices in buildings. Eggs: 4—6, white, with brown markings.

*Season:* Common permanent resident.

*Records:* Fayette Co. every month of year 1918 (W. D. F.); Valley View, Aug. 31, 1921 (W. D. F.); Nelson Co. young able to fly May 17, 1921 (B. J. Blincoe); Lexington, winter records, Jan. 21, 1916, all winter 1918 (C. K. Morrell); Jan. 1, 1903; Jan. 1, 1904; Jan. 1, 1905; Feb. 19, 1906; Feb. 24, 1908; Feb. 9, 1911 (M. Didlake); Bowling Green (G. Wilson); Ballard Co. (G. Wilson); Bourbon Co. Mar. 29, 1923 (V. Dodge and W. D. F.).

*Remarks:*

The largest of our wrens. Very nervous, restless, and noisy. A specimen taken at Valley View had made its last meal entirely on spiders.

**251. (719) *Thryomanes bewicki* Aud.—Bewick's Wren.**

*Description:* L. 5; W. 2.3; T. 2.2. Upperparts dark cinnamon-brown without markings; tail with middle feathers gray with black bars, and outer feathers black with white markings; white line over eye; underparts grayish white. Sexes alike. Nest: of grass and straw in brush-piles and about buildings. Eggs: 4—7, white, speckled with brown.

*Season:* Permanent resident.

*Records:* Fayette Co., winters, (W. D. F.); Nelson Co. 7 eggs Apr. 19, 1912; 4 eggs Apr. 21, 1920; 5 young about five days old July 18, 1920; 6 fresh eggs Mar. 29, 1921 (B. J. Blincoe); Lexington, winter records, Jan. 23, 1919 (C. K. Morrell); Jan. 17, 1907 (M. Didlake); Bowling Green (G. Wilson); Ballard Co. (G. Wilson).

*Remarks:*

Very friendly and common about dwellings. A wonderful singer with a loud clear song. They will build their nests almost anywhere; Butler records nests in tin cans, gourds, on the mantel in a deserted house, on a ball of twine in a binder, and even on the draw-bar of a freight car which was standing on a siding. We have known them to nest in an old hat in an outbuilding. They destroy enormous numbers of insects.

**252. (721) *Troglodytes aedon* Vieill.—House Wren.**

*Description:* L. 5; W. 2; T. 2. Upperparts brown with the head darker and the rump and tail reddish; wings and tail distinctly barred with black; underparts gray, often tinged with brown. Sexes alike.

*Season:* Rare migrant.

*Records:* Louisville (W. D. F.); Nelson Co. May 8, 12, 1920 (B. J. Blincoe); Lexington, Apr. 28, 1907; May 3, 1913 (M. Didlake); May 4, 1919; Mar. 21, 1920 (D. J. Healy); Mar. 27, 1920 (W. Sams).

*Remarks:*

Chapman includes Kentucky in the breeding range of this wren but we have no records of nests.

**253. (722) *Nannus hiemalis* Vieill.—Winter Wren.**

*Description:* L. 4; W. 2; T. 1. Upperparts brown, darker on head and brightest on rump and tail; wings dusky, barred with brown and marked with white; tail barred brown and black; underparts yellowish-brown. Sexes alike.

*Season:* Common migrant and occasional winter resident.

*Records:* Lexington, Mar. 25, 1917 (C. K. Morrell); Apr. 6,



1913 (M. Didlake); Apr. 30, 1920 (W. Sams); Nelson Co. Oct. 8, 1913; Oct. 11, 1916; Oct. 7, 1917; Oct. 17, 1919; Nov. 1, 1920; Apr. 2, 1916; Mar. 18, 1917; Apr. 21, 1918; Apr. 16, 1920; Apr. 27, 1921 (B. J. Blincoe); Bowling Green, Feb. 22—May 18; Oct. 21—25 (G. Wilson).

**Remarks:**

Can be recognized at once by its extremely short tail.

**254. (724) *Cistothorus stellaris* Licht.—Short-billed Marsh Wren.**

**Description:** L. 4; W. 2; T. 1.5. Beak very short and slender; upperparts streaked with white, black and buff; wings and tail barred; underparts white, with a broken brown band across the breast. Sexes alike.

**Season:** Visitant.

**Records:** Lexington, May 9, 1920 (D. J. Healy); Nelson Co. May 1, 1882 (C. W. Beckham); Bowling Green, May 5, 1917; Apr. 27, 1918 (G. Wilson).

**Remarks:**

A rare and shy little wren, usually found only in marshy regions.

**255. (725) *Telmatodytes palustris* Wils.—Long-billed Marsh Wren.**

**Description:** L. 5.5; W. 2; T. 2. Beak long; crown olive-brown; white streak over eye; back streaked brown and white; wings and tail barred with brown and black; underparts white with sides and flanks tinged with brown. Sexes alike.

**Season:** Migrant.

**Records:** Lexington, Aug. 23, 1921 (W. Sams); Bowling Green, May 5; Sept. 27—28 (G. Wilson).

**Remarks:**

Found only in marshes and swamps.

**Family Certhiidae.—The Creepers.**

**Characters:** Tarsus scaled and with hind edge compressed; ten primaries; beak slender and curved downward; tail

feathers stiff and pointed. These birds creep about on trees, using their tails as props.

**256. (726) *Certhia familiaris americana* Bonap.—Brown Creeper.**

**Description:** L. 5.5; W. 2.5; T. 2.6. Upperparts mottled dark brown, white and buff; white line over eye; rump reddish-brown; tail brown with edges paler; wings barred with reddish-white; underparts white. Sexes alike.

**Season:** Common migrant and fairly common winter resident.

**Records:** Lexington, Jan. 21, 1916; Mar. 25, 1917; Jan. 12, 1919 (C. K. Morrell); Feb. 13, 1904; Jan. 5, 1905; Feb. 25, 1906; Mar. 21, 1907; Feb. 4, 1911; Feb. 29, 1913 (M. Didlake); Mar. 29, 1920 (W. Sams); Bowling Green, Oct. 4—May 21 (G. Wilson); Nelson Co. Oct. 21, 1915; Oct. 8, 1916; Oct. 25, 1919; Mar. 24, 1914; Apr. 13, 1913; Apr. 11, 1915; Apr. 2, 1916 (B. J. Blincoe).

**Remarks:**

Chapman has well described this bird as follows:\*

"The facts in the case will doubtless show that the patient, plodding Brown Creeper is searching for the insects, eggs, and larvae which are hidden in crevices in the bark; but after watching him for several minutes one becomes impressed with the thought that he has lost the only thing in the world he ever cared for, and that his one object in life is to find it. Ignoring you completely, with scarcely a pause, he winds his way in a preoccupied, near-sighted manner up a tree trunk. Having finally reached the top of his spiral staircase, one might suppose he would rest long enough to survey his surroundings, but like a bit of loosened bark he drops off to the base of the nearest tree and resumes his never-ending task.

He has no time to waste in words, but occasionally, without stopping in his rounds, he utters a few sereeping, squeaky notes, which are about as likely to attract attention as he is himself."

As indicated in the above description, the Brown Creeper is a very industrious insect-eater and is characterized by its habit of climbing spirally up the trunks of trees. A very inconspicuous bird and a very valuable one.

\*Chapman, F. M. *Birds of Eastern North America*, p. 432.

**Family Sittidae.—The Nuthatches.**

*Characters:* Tarsus scaled and with hind edge compressed; ten primaries; beak long and slender, with lower mandible slightly turned upward; tail short and square with outer feathers marked with white.

**257. (727) *Sitta carolinensis* Lath.—White-breasted Nuthatch.**

*Description:* L. 6; W. 3.5; T. 2. Male: crown of head jet black; upperparts bluish-gray; white stripe over eye; wings marked with black and white; tail black and white. Female: crown dark gray, black behind.

*Season:* Occasional winter resident.

*Records:* Lexington, Apr. 12, 1904 (M. Didlake); Nelson Co. (B. J. Blincoe); Bowling Green, (G. Wilson); Ballard Co., common (G. Wilson).

**Remarks:**

One of the most deservedly popular winter birds wherever it is found. No weather is too cold for it, and it adds a note of animation to the bleakest winter day. Its habits of assuming unusual positions on the trunks and limbs of trees, often hanging head-downwards, distinguishes it from all other birds. It feeds entirely on insects and their eggs and larvae.

**258. (728) *Sitta canadensis* Linn.—Red-breasted Nuthatch.**

*Description:* L. 4.5; W. 2.5; T. 1.5. Similar to preceding but decidedly smaller and with a broad black stripe through the eye, and the underparts tinged with reddish.

*Season:* Migrant and occasional winter resident.

*Records:* Lexington, Mar. 2, 1904; Apr. 21, 1905; May 7, 1911; Mar. 8, 1913 (M. Didlake); Apr. 11, 1920 (D. J. Healy); Apr. 30, 1920 (W. Sams); Nelson Co. Oct. 6, 1912—Feb. 16, 1913; Oct. 7, 1915; Oct. 8, 1916; Oct. 19, 1919; Feb. 25—May 4, 1920 (B. J. Blincoe); Bowling Green, Apr. 27—May 4; Oct. 3—Nov. 4 (G. Wilson); Woodford Co. Oct. 13, Dec. 29, 1901; Oct. 21, 1906 (Mrs. L. Brodhead).

**Remarks:**

A more northern bird than the white-breasted species and somewhat erratic in its appearance in Kentucky.

**Family Paridae.—The Titmice.**

*Characters:* Tarsus scaled and with hind edge compressed; ten primaries with the fourth or fifth the longest and the first very short; beak short, stout, rounded, and not notched at tip; tail rather long.

**259. (731) *Baeolophus bicolor* Linn.—Tufted Titmouse; "Tomtit".**

*Description:* L. 6; W. 3.3; T. 3. Male: above, gray; forehead black; prominent crest on head; below, white on throat, breast and belly; sides reddish. Female: same. Nest: In holes in trees and stumps and in old woodpecker-holes, lined with feathers, moss, hair, wool, threads and stripped bark. Eggs: 6—8, white, with brown dots.

*Season:* Permanent resident; very abundant in summer.

*Records:* Lexington, Apr. 20, 1919 (C. K. Morrell); Jan. 24, 1903; Jan. 1, 1904; Jan. 23, 1905; Feb. 21, 1909; Apr. 10, 1910; Apr. 14, 1912; May 10, 1913 (M. Didlake); May 9, 1920 (D. J. Healy); May 8, 1920 (W. Sams); Bowling Green (G. Wilson) Ballard Co. (G. Wilson); Nelson Co. nest with young May 18, 1915; young 3—4 days old May 22, 1920 (B. J. Blincoe); Boone's Creek, Apr., 1922; Woodford Co.; Anderson Co.; Jessamine Co. (W. D. F.); Bourbon Co. Mar. 29, 1923 (V. Dodge and W. D. F.).

**Remarks:**

Often locally called the "Peter-Bird" because of its incessant, high-pitched, oft-repeated call of "peter, peter, peter, peter", generally followed by a hoarse "de-de-de-de". One of the most abundant and conspicuous of our woodland birds, easily recognized by its crest, easily located by its persistent song, and easily approached because of its fearless disposition and inquisitive nature. We once sat down to rest on a stone beside a pool near Tyrone just as a mother titmouse brought her five youngsters up for a drink. The anger and disgust of the mother bird expressed itself in most persistent scolding but she did not come nearer than six or eight feet; the young birds, however, after a short wait, decided that the intruder was not to be feared and came boldly to bathe and drink from the small pool, one of them perching jauntily on our shoe between drinks.

**260. (735) *Penthestes atricapillus* Linn.—Chickadee.**

*Description:* L. 5; W. 2.5; T. 2.5. Above, gray; crown jet black; greater wing coverts distinctly edged with white; below, throat jet black, rest of underparts white or whitish; tail and wing equal in length. Sexes alike.

*Season:* Rare visitant.

*Records:* Woodford Co. (Mrs. L. Brodhead).

*Remarks:*

This is a close relative of our common chickadee (the following species) but its range is farther north and it only occasionally visits us in the winter. It may be distinguished by its larger size and by the white margins of the wing-coverts. Like its more southern relative, it is a most delightful and friendly winter bird and is a welcome visitor.

**261. (736) *Penthestes carolinensis* Aud.—Carolina Chickadee.**

*Description:* L. 4.5; W. 2.5; T. 2.3. Similar to preceding but smaller. Above, gray with black crown and nape; below, chin and throat jet black, rest of underparts gray. Sexes alike. Nest: in holes in trees and stumps, lined with moss, feathers, wool and hair. Eggs: 6—10, white, speckled with brown at larger end.

*Season:* Abundant permanent resident.

*Records:* Fayette Co. winters, (W. D. F.); Nelson Co. young leaving nest May 10, 1921 (B. J. Blincoe); Lexington, all winter in 1916, 1918 and 1919 (C. K. Morrell); Bowling Green (G. Wilson); Ballard Co. (G. Wilson); Woodford Co. (Mrs. L. Brodhead); Bourbon Co. Mar. 29, 1923 (V. Dodge and W. D. F.).

*Remarks:*

Our commonest and friendliest winter bird. It is more active during cold weather than most of our winter residents and will come to feeding-stations and window-sills with confidence and trust. Its shining black cap and throat makes it easy to recognize and its distinct announcement of its name—"chick-a-dee-dee"—is its prompt introduction. A valuable insect-eater and a most lovable and desirable bird. An entomologist estimates that a chickadee averages over five thousand

cankerworm eggs a day during the month or more that the eggs of this pest are being laid.

**Family Sylviidae.—Kinglets and Gnatcatchers.**

*Characters:* Tarsus compressed behind and with square scales in front; first primary about one-third the length of the longest; beak very slender and notched at the tip.

**262. (748) *Regulus satrapa* Licht.—Golden-crowned Kinglet.**

*Description:* L. 4; W. 2.25; T. 2. Male: above, olive-green; crown yellow with an orange center and a black stripe on each side; forehead white; white stripe over eye; below, uniform sordid white. Female: similar but without the orange center in the crown.

*Season:* Common migrant; some spend the winter here.

*Records:* Lexington, Jan. 21, 1916; Mar. 25, 1917; Apr. 14, 1918; Apr. 6, 1919 (C. K. Morrell); Feb. 6, 1903; Jan. 10, 1905; Feb. 25, 1906; Mar. 17; 1907; Mar. 24, 1908; Mar. 13, 1910; Feb. 9, 1911; Feb. 23, 1913; Apr. 6, 1914 (M. Didlake); Mar. 28, 1919 (D. J. Healy); Mar. 21, 1921 (W. Sams); Boone's Creek, Apr. 2, 1922 (W. D. F.); Nelson Co. Oct. 6, 1915; Oct. 1, 1916; Oct. 7, 1917; Oct. 19, 1919; Oct. 10, 1920; Apr. 17, 1914; Apr. 12, 1916; Apr. 15, 1917; Apr. 14, 1918; Apr. 18, 1920; Apr. 10, 1921 (B. J. Blincoe); Bowling Green, Oct. 13—Apr. 27 (G. Wilson); Harlan Co. Apr. 27, 1923 (W. D. F.).

*Remarks:*

A beautiful, dainty little bird which is partial to dense woods and thickets but occasionally visits the shrubbery of lawns and parks especially where there is red cedar. It is at once recognized by its bright yellow crown. It feeds entirely on insects. It has a shrill, high-pitched, warbling song.

**263. (749) *Regulus calendula* Linn.—Ruby-crowned Kinglet.**

*Description:* L. 4.5; W. 2; T. 2. Male: above, olive-green; crown with a patch of bright red in center; below, sordid white. Female: similar but with little or no red on crown.

*Season:* Migrant; fairly common.

*Records:* Lexington, Apr. 16, 1916; Apr. 14, 1919 (C. K. Morrell); Apr. 10, 1903; Apr. 5, 1904; Apr. 15, 1905; Apr.



28, 1907; Apr. 11, 1908; Apr. 29, 1914 (M. Didlake); Apr. 27, 1919 (D. J. Healy); Apr. 27, 1920 (W. Sams); Apr. 21, 1922 (W. D. F.); Nelson Co. Apr. 15—May 6, 1917; Apr. 21, 1918; Apr. 8—May 4, 1920; Apr. 3—May 7, 1921; Oct. 5—Nov. 7, 1919; Sept. 27—Oct. 24, 1920 (B. J. Blincoe); Bowling Green, Mar. 24—Sept. 27 (G. Wilson).

*Remarks:*

These tiny little olive-green birds may be seen during their migration seasons industriously flitting about thickets and ever-green shrubbery catching insects. They are quite friendly and not at all timid. They have unusually strong carrying voices for such diminutive birds.

**264. (751) *Poliophtila caerulea* Linn.—Blue-gray Gnatcatcher.**

*Description:* L. 5; W. 2; T. 2. Male: above, blue-gray, bluer on head and lighter on rump; black line over eye and black patch on forehead; whitish ring around eye; below, white; tail black; three outer tail-feathers marked with white. Female similar but without the black on forehead or over the eye. Nest: of fine vines, spider-webs, grasses and thin strips of bark, covered with lichens, on horizontal branch or in a fork 20—50 feet up in small trees. Eggs: 4—5, bluish-white with many brown speckles.

*Season:* Common summer resident.

*Records:* Fayette Co. Apr.—Sept. (W. D. F.); Nelson Co. earliest arr. Mar. 23, 1921; latest dep. Sept. 6, 1917; set of four fresh eggs May 12, 1921 (B. J. Blincoe); Lexington earliest arr. Mar. 26, 1904 (M. Didlake); Bowling Green, Mar. 24—Sept. 27 (G. Wilson); Ballard Co. (G. Wilson); Woodford Co.; Anderson Co. (W. D. F.).

*Remarks:*

Active, restless, fidgety little birds usually found in thickets and dense woodlands where their darting movements, as they dash about catching insects on the wing, is sure to be noticed. Their small, well-groomed bodies, very long tails with white outer feathers, inquisitive habits, and remarkable gyrations in the air, make them easily recognized. Their nests, so protectively colored, always cause remark but are extremely hard to find.

The gnatcatcher lives entirely on insects and is of much

economic value. It can sing, but its voice is very weak and is seldom heard.

**Family Turdidae.—The Thrushes.**

*Characters:* Front of tarsus not scaled above but smooth or "booted"; hind edge compressed; ten primaries, the first very short and the third the longest; tip of upper mandible notched; tail square at tip.

**265. (755) *Hylocichla mustelina* Gmel.—Wood Thrush.**

*Description:* L. 6—8; W. 4—4.5; T. 3. Above, cinnamon-brown, brighter on the head and more olive on the tail; below, white, with very large round black spots on breast and sides. Sexes alike. Nest: of leaves and fine twigs lined with mud and fine rootlets, generally in saplings about 6—8 feet up.

*Season:* Common summer resident.

*Records:* Fayette Co. Apr.—Sept. (W. D. F.); Lexington earliest arr. Apr. 22, 1920 (W. Sams); Nelson Co. Apr. 20—Oct. 5 (C. W. Beckham); Bowling Green, Mar. 22—Oct. 14 (G. Wilson); Ballard Co. (G. Wilson); Woodford Co.; Anderson Co.; Bell Co. (W. D. F.); Bourbon Co. Mar. 29, 1923; Harlan Co. Apr. 27, 1923, abundant (V. Dodge and W. D. F.).

*Remarks:*

The most abundant and the least timid of the true thrushes (genus *Hylocichla*) in Kentucky. It is often found in cities and towns. Since it breeds here, we are treated to its song, which is famous for its beauty. Of this song Beckham says: "In quality of tone perhaps the most gifted of our woodland vocalists. The song of no bird that I know comes anywhere near the full, liquid timbre of the note of the woodthrush". Comparing it with the Hermit Thrush, Chapman states:\*\*

"The songs of the Wood and Hermit Thrushes are of the same character, but, while the Hermit is the more gifted performer, the Wood Thrush does not suffer by the comparison. His calm, restful song rings through the woods like a hymn of praise, rising pure and clear from a thank-

\*Beckham, C. W. Birds of Nelson County, p. 7.

\*\*Chapman, F. B. Birds of Eastern North America, pp. 492-493.

ful heart. It is a message of hope and good cheer in the morning, a benediction at the close of day.

The flutelike opening notes are an invitation to his haunts; a call from Nature to yield ourselves to the ennobling influences of the forest".

Butler writes: "The song of the Wood Thrush is one of the most beautiful in the forest".\* Certainly the wood thrush is one of the finest singers that performs in Kentucky.

Like other thrushes, it feeds partly on insects, chiefly ground-inhabiting forms, and partly on wild fruits and berries.

**266. (756) *Hylocichla fuscescens fuscescens* Steph.—Veery.**

*Description:* L. 6.5—7.5; W. 4; T. 3. Above, uniform light tawny brown; below, white, tinged with buff on breast and sides; sides of throat and all of breast marked with rather regular rows of triangular brown spots; sides grayish. Sexes alike.

*Season:* Migrant; not common.

*Records:* Fayette Co. Apr. 14—May 5 (W. D. F.); Nelson Co. Apr.—May (C. W. Beckham); Lexington, Apr. 22, 1914 (M. Didlake); Apr. 20, 1920 (W. Sams); Bowling Green, Apr. 1—May 11; Sept. 18 (G. Wilson); Woodford Co.; Jessamine Co.; Clark Co. (W. D. F.).

*Remarks:*

Sometimes called "Wilson's Thrush". A famous songster that often sings far into the night. Its notes have been described as "clear, bell-like, resonant, distinct, yet soft and of indescribable sadness".\*\* Like most of our migrant thrushes, however, it rarely sings except at its breeding place and its full song is seldom heard in this State.

Its food consists of insects and wild berries.

**267. (757) *Hylocichla aliciae aliciae* Baird.—Gray-checked Thrush.**

*Description:* L. 7.5; W. 4; T. 3. Above, uniform olive; white ring around eye; cheeks gray; below, middle of throat, breast and belly white; sides of breast cream-buff with

\*Butter, A. Birds of Indiana, p. 2143

\*\*Ibid. p. 1159.

semicircular black spots; sides grayish-brown. Sexes alike.

*Season:* Migrant.

*Records:* Lexington, Apr. 16, 1916; Apr. 24, 1918 (C. K. Morrell); May 1, 1904 (M. Didlake); Nelson Co. last week of April and first week of May (C. W. Beckham); May 13, 1921 (B. J. Blincoe); Bowling Green, Apr. 21—May 28; Sept. 20—Oct. 23 (G. Wilson); Lexington, May 11, 1923 (W. R. Allen); May 3, 1923 (W. D. F.).

*Remarks:*

Has about the same habits as the Olive-backed Thrush with which it often associates. It is more solitary in habit and retiring in disposition than the Olive-back. It feeds almost entirely on noxious insects and wild fruits and is very beneficial. It generally feeds on or near the ground and is so timid that it is seldom seen.

**268. (758a) *Hylocichla ustulata swainsoni* Tsch.—Olive-backed Thrush.**

*Description:* L. 7; W. 4; T. 3. Above, uniformly olive; buff ring around eye; buff on lores; below, throat and upper breast buff; breast and sides of throat spotted with black; sides grayish; belly white. Sexes alike.

*Season:* Migrant; very common during both migrations.

*Records:* Lexington, Apr. 29, 1916; Mar. 16, 1917; May 2, 1919 (C. K. Morrell); Apr. 21, 1904 (M. Didlake); May 3, 1919; May 15, 1920 (D. J. Healy); Nelson Co. May 10—18, 1921 (B. J. Blincoe); Bowling Green, Apr. 17—May 19; Sept. 20—Oct. 18 (G. Wilson); Woodford Co.; Anderson Co. (W. D. F.).

*Remarks:*

Generally found in woodlands; spends much of its time on the ground; feeds on insects and wild fruits. Its song is loud, sweet and ringing from a high perch in a dead tree-top, and is usually heard in the evening.

**269. (759b) *Hylocichla guttata pallasi* Cab.—Hermit Thrush.**

*Description:* L. 7; W. 3.5; T. 2.75. Above, olive-brown with rump and tail light red; buff ring around eye; below,

whitish, throat and upper breast buffy; sides of throat and lower breast with triangular black spots; sides brownish; belly white. Sexes alike.

*Season:* Common migrant; may on rare occasions winter here.

*Records:* Lexington, Apr. 16; 1916; Apr. 25, 1917; Apr. 20, 1919 (C. K. Morrell); Apr. 18, 1903; Mar. 31, 1904; Apr. 15, 1905; Apr. 9, 1906; Apr. 7, 1908; Apr. 21, 1909; Apr. 15, 1912; Apr. 22, 1913; May 2, 1914 (M. Didlake); Apr. 10, 1920 (W. Sams); Apr. 20, 1922 (W. D. F.); Nelson Co. Apr. 2, 1916; Apr. 8, 1917; Apr. 7—20, 1920; Mar. 7—Apr. 19, 1920; Mar. 23—Apr. 24, 1921; Oct. 15—22, 1916; Oct. 7, 28, 1917; Oct. 24—Nov. 8, 1920 (B. J. Blincoe); Bowling Green, Mar. 12—May 14; Sept. 16—Oct. 24 (G. Wilson); Harlan Co. Apr. 27, 1923 (V. Dodge and W. D. F.).

*Remarks:*

In the author's opinion, the Hermit Thrush is the sweetest singer in America. Its voice has been praised in extravagant terms by many naturalists and it well deserves all the praise which it has received. Of it, Mr. Bicknell has written\* "the strains ..... in tranquil clearness of tone and exalted serenity of expression, go beyond any woods music we ever hear" and John Burroughs has called it "the finest sound in Nature".\*\* Neltje Blanchan states: "Beyond the question of even the hypercritical, the hermit thrush has a more exquisitely beautiful voice than any other American bird. It is the one theme that exhausts all the ornithologists' musical adjectives".† Unfortunately it does not sing much during its migrations and it is not in its best voice while passing through Kentucky.

The Hermit Thrush may be recognized by the fact that it is the only thrush which has the tail brighter in color than the back.

It feeds almost entirely on insects which it finds on the ground and is a very beneficial bird. The stomach contents as reported by Professor Forbes consisted of ants (15%), caterpillars and cutworms (19%), beetles (30%), bugs (8%), grass-

hoppers (8%), spiders (4%), thousand-legs (12%) and the balance a variety of other insects.\*

270. (761) *Planesticus migratorius migratorius* Linn.—Robin.

*Description:* L. 9—10; W. 5; T. 4. Male: above, head, wings and tail blackish; two outer tail feathers tipped with white; upper back slate gray; below, throat, breast and sides reddish; belly white; beak yellow. Female: similar but paler. Nest: of grass, twigs, weeds, strings, paper, etc., put together with mud and usually lined with grass. Eggs: 4—6, greenish-blue.

*Season:* Abundant permanent resident.

*Records:* From every county in the State. Found every month in the year in most counties.

*Remarks:*

Our commonest native wild bird. It has held its own well against cats and English Sparrows and has not diminished in numbers in recent years. About half of its food is animal and half vegetable matter. Of the former, earthworms and noxious insects make up the bulk of its diet; of the latter, seeds and wild fruits are the chief items, with enough cherries during the cherry season to make it considerable of a nuisance. It must be said, however, that cultivated fruits represent only about 4% of its food for the entire year. The robin has an extensive vocabulary and can express satisfaction, happiness, alarm, anger and suspicion in unmistakable bird language. Its song shows so much variation that it is often mistaken for other birds.

271. (766) *Sialia sialis sialis* Linn.—Bluebird.

*Description:* L. 7; W. 4; T. 2.6. Male: above, bright blue; below, throat and breast reddish; belly white. Female: above grayish; wings, tail and rump blue, below, paler. Nest: of grass, in hollow trees, posts or stumps. Eggs: 3—6, greenish-blue.

*Season:* Permanent resident; becoming scarce.

*Records:* Lexington, Feb. 22, 1916; May 12, 1918; Mar. 30, 1919

\*Bicknell, E. P. Chapman's Birds of Eastern North America, p. 497.

\*\*Burroughs, John Wake Robin

†Blanchan, Neltje. Bird Neighbors, p. 128.

\*Forbes, S. A. Ill. State Lab. Nat. Hist. Bull. No. 2, pp 129-130



(C. K. Morrell); Mar. 26, 1920 (W. R. Campbell); Feb. 20, 1920 (M. Didlake); Mar. 23, 1918; May 4, 1919; Mar. 21, 1920 (D. J. Healy); Nelson Co. nest building Apr. 1, and set of six eggs in same nest Apr. 16, 1912; nest with young Apr. 27, 1916; five fresh eggs Apr. 16, 1921; five incubated eggs May 16, 1921 (B. J. Blincoe); Bowling Green (G. Wilson); Ballard Co. (G. Wilson); Woodford Co.; Anderson Co.; Jessamine Co.; Hart Co.; Bell Co.; Harlan Co. (W. D. F.); Bourbon Co. Mar. 29, 1923 (V. Dodge and W. D. F.).

*Remarks:*

One of the friendliest and most domestic of our native birds. "With the sky on its back and the earth on its breast" it is a constant delight around our homes, gardens and orchards. It feeds almost entirely on insects and is an extremely valuable bird. Unfortunately, its trusting disposition and friendly habits, and its fondness for building its nest close to the habitations of man, make it an easy prey for cats and English Sparrows. It is fast disappearing and should have special encouragement and protection.

## CHAPTER VI.

### THE MAMMALS OF KENTUCKY

#### NATIVE MAMMALS

The wild mammals of Kentucky are rapidly disappearing. We have already called attention to the fact that the first settlers in this State found a hunter's paradise; a wilderness of dense forests undisturbed, save by the trail of the Indian, the lair of the panther and the runway of the elk; beautiful water-courses easy of traverse and teeming with fish, otter and beaver; rugged mountains harboring the bear and wildcat; broad plains trampled by the buffalo and ranged by the deer. Game was so plentiful as to be held in contempt; fur-bearing animals were abundant; the hunter and trapper led a happy and easy existence. Slowly these conditions changed. With the cutting off of the forests the larger animals retreated; clearings increased to become fertile farm-lands or to grow up into neglected thickets; settlements were founded and trails through the forest became roads over which the hardy pioneers brought their families, their household goods and their stock into the new land called "Kentucke". With the change in conditions came the change in the animal life. Forest-loving species became scarcer; thicket and plain-inhabiting forms doggedly persisted; river forms scattered to more remote waters. Change followed change, slowly at first, then more rapidly, as the thousand and one alterations incident to the settling of a new country took place, each tending to affect the faunal life. These changes are still going on. Our native animals are making their last stand and their extinction seems to be only a question of a few years. The mammals which were valuable for food have mostly disappeared; the fur-bearing forms are almost gone; those which are pests to crops or stock are being hunted to their death; the few which remain make a pitifully small list.

#### INTRODUCED MAMMALS

In this report only the native wild mammals are considered. All of the domestic mammals--the horses and cattle, sheep,

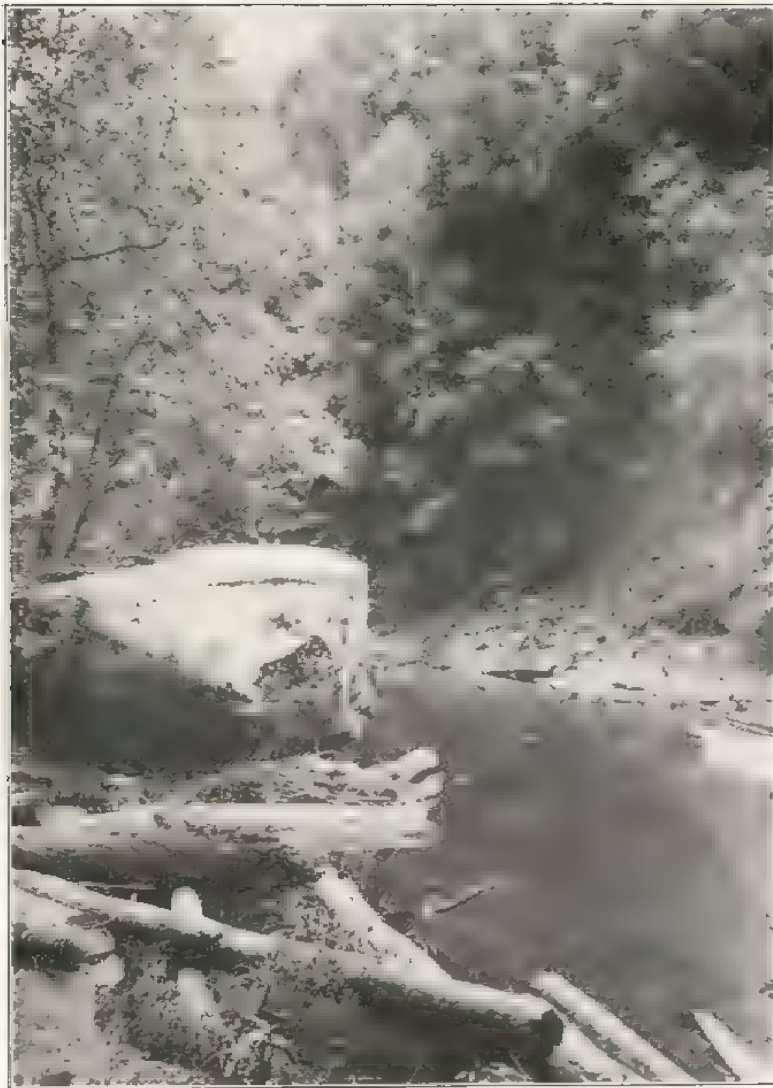


Fig. 52

Photo by W. R. Jilkaon

## THE FOREST PRIMEVAL

A secluded spot in the gorge of Big Paint Creek still undisturbed by man

goats and pigs, dogs and cats, introduced rats and mice—all appeared with the advent of the white man. These have no place in our discussion since they are of interest to the agriculturist and animal breeder rather than to the zoologist.

## CHARACTERS OF MAMMALS

Mammals are distinguished from all other animals by the fact that they all have hair on some parts of their bodies, the females have mammary glands from which they suckle their young, and the young are always born alive. The body cavity is divided by a diaphragm into two cavities, a thorax and an abdomen. This class of animals includes our largest and best known forms and we list here those which still remain as native wild animals of Kentucky.

## RECORDS

We are listing only those mammals which have been seen in the State within very recent years by competent observers, unless a statement to the contrary is expressly made. The distribution records are interesting and are believed to be reliable so far as they go, but they are of questionable value so far as completeness is concerned since we lack information regarding a number of these mammals from many counties. It is hoped that persons possessing data concerning these animals from regions not here included, will report such facts so that our State records may be kept up to date.

## DESCRIPTIVE TERMS

In describing mammals a large number of terms are necessarily used, but few of these are technical, and most of them are easily recognized. The principal characters to be noted are the size, shape and coloration of the animal, the structure of the legs and feet, the character of the teeth, the shape of the skull, and the nature of the hair. Since all of the orders represented are well known and most of the species comparatively common, no difficulty will be experienced in determining the distinguishing characters.

## LIST OF SPECIES

## ORDER MARSUPIALIA.—THE POUCHED MAMMALS.

1. *Didelphis virginiana* Kerr.—Opossum; "Possum".

*Description:* Length 36 in., Tail 15 in.; Five-toed; plantigrade; no claws on hind thumbs; tail very long, prehensile, nearly naked, covered with scales and with a few scattered hairs; snout pointed; ears black and leathery; fur soft but containing long black and white hairs which give it a ragged frosty appearance; sides of face, throat and chin whitish; legs dark; female with pouch on abdomen in which young are carried for a considerable time after birth.

*Distribution:* Very abundant throughout the wooded regions of the State

*Records:* By counties—Anderson (W. D. F.); Ballard (E. A. Whalin); Barren (J. O. Horning); Bath, abundant (C. F. Martin); Bell (R. H. Shipp); Boone (R. Clare); Bracken (P. J. Arnold); Breathitt (G. W. Thompson); Bullitt (J. H. Sanders); Butler, abundant (F. H. Spickard); Calloway (J. B. Gardner); Campbell (A. B. Regenstein, H. F. Link); Carlisle (B. A. Hensley); Carroll (G. C. Routt); Casey (M. Rodgers); Clay (L. A. Clark); Clinton (W. M. Watkins); Crittenden (J. R. Spencer); Cumberland (C. S. Payne); Daviess (J. W. Whitehouse); Edmonson (W. G. Bullinger); Elliott (H. H. Mayse); Fayette (L. Moore); Fleming (H. F. McKenney); Fulton (H. Maddox, Jr.); Gallatin (F. Irwin); Graves (B. H. Mitchell); Grayson (J. S. Hughes); Green (C. Jameson); Harlan (C. Powell); Hart (J. S. Pullen); Henderson (W. Holloway); Henry (L. S. Rhoades); Hickman (L. Jackson); Hopkins (M. M. Gordon); Jackson (J. Jones); Jessamine (W. D. F.); Kenton (C. A. Wicklund); Knott (A. Campbell); Knox (E. Mayhew); Larue, abundant (J. N. Jones); Laurel (F. B. Wilson); Lawrence (G. C. Baker); Leslie (M. Morgan); Lewis (R. O. Bate); Lincoln (C. B. Elston); Livingston (C. H. Wilson); Logan (W. R. Whitlow); McCracken (J. R. Bird); McLean (R. H. Ford); Marion (H. J. Childress); Marshall (G. O. Basham); Martin (E. Cassidy); Morgan (R. B. Rankin); Muhlenberg (F. O. Townes); Nelson (C. L. Hill); Ohio (E. Wallace); Oldham (G. B. Nance); Owen (D. P. Morris); Owsley (P. M. Frye); Pipe (W. M. Wesley); Powell (E. Ewen);

Pulaski (W. C. Wilson); Taylor (J. L. Miller); Union (A. M. Allen); Washington, abundant (R. M. Heath); Webster (L. E. Cutler); Wolfe (W. R. Sebastian); Woodford (W. D. F.).

*Remarks:*

One of the most remarkable animals in North America, since it belongs to an order of which the only other well-known representative is the kangaroo of Australia. That it should be so far removed from its relatives is a curious instance of discontinuous geographical distribution.

In appearance and habits it is unique among Kentucky mammals. Its long prehensile tail enables it to swing in perfect security from branches while its peculiar hind foot with opposable clawless thumbs allows it to use these appendages as hands. The young are developed without a placenta and are prematurely born so that they must be kept in a pouch formed by a fold of the skin about the milk glands of the mother until they are able to care for themselves. The animal represents a very primitive type of Mammalia which is now almost extinct in most parts of the world.

Opossums live in hollow logs, stumps, or cavities under trees or banks, or beneath deserted buildings. When disturbed they usually take to trees and the "Possum hunt" consists in "treeing" the animal and shooting it or shaking it down to the dogs—the "shaking down" process being more easily said than done. Opossums are sluggish, lazy, and take on much fat. Nocturnal in habits, they are seldom seen in the day-time but begin to prowl about at dusk. Their ability to feign death or "play possum" is traditional.

Specimens which we have kept in the laboratory seemed practically omnivorous and fed on all kinds of garbage from the cafeteria, being perhaps fondest of corn and potatoes.

The idea that the flesh is a great delicacy is hardly supported by the facts, as we have found few persons who honestly preferred it to other meat. It is very greasy and rather rank in flavor. According to tradition it is highly prized by the negroes of the South but our experience has been that the "possum hunt", like the "coon hunt" is more often carried on for other reasons than that of procuring a desirable food.



The tradition that the opossum has had no hair on its tail since Ham shaved off these hirsute ornaments from the specimen in the ark in order to get strings for a banjo, and that since that time "whar you finds de nigger, dars de banjo an' de 'possum" is characteristically related in the well-known poem on that subject.

Opossums are still abundant in Kentucky. The Lexington Leader of Jan. 14, 1921, records the capture of sixty-eight of these animals in one hunt by two hunters near Ritner. The same newspaper under date of Feb. 3, 1922, notes the capture of a typical pink-eyed albino opossum by Dan McKelvey near Woodland Mills.

#### ORDER RODENTIA.—THE GNAWERS.

### 2. *Lepus sylvaticus* Bach.—Rabbit; Gray Rabbit; "Cottontail".

*Description:* Length 18 in.; tail 2 in.; ear 3 in. Gray above, varied with brown and black; ears two-thirds length of head; white below; tail short and cottony-white; hind legs long and strong; hind foot not longer than head; soles furred; 28 teeth; four incisors above and two below; six molars on each side above and five on each side below.

*Distribution:* Abundant throughout the state.

*Records:* From every county in the State; increasingly abundant in the last two or three years.

#### *Remarks:*

Do considerable damage by gnawing the bark from young trees. Are killed in large numbers each year because of their depredations and for their flesh.

### 3. *Zapus hudsonius* Zimm.—Jumping Mouse.

*Description:* Length 8 in.; tail 5 in.; ear .75 in. Tail much longer than body; hind legs very long and fitted for leaping, four molars above and three below on each side; fur coarse and rough; soles of feet naked; color, dark fawn above with black-tipped hairs on back; sides lighter; belly sordid white; feet white; tail brown above and white below.

*Distribution:* Probably throughout the State.

*Records:* Bourbon Co. Jan. 26, 1922 (V. K. Dodge); Fayette Co. 1920-1922 (W. D. F.).

#### *Remarks:*

This timid little kangaroo-like mouse is to be found in the hayfields where it lives in an underground nest, feeding on seeds, berries and occasional insects in the summer and hibernating for an unusually long period (sometimes over six months) in the winter.

These mice get their popular name from their peculiar jumping habits, although their usual method of locomotion is running, much like the field mice, and they seldom jump unless badly frightened.

They are entirely harmless and are not abundant enough in this State to be considered as pests.

### 4. *Fiber zibethicus* Linn.—Muskrat

*Description:* Length 24 in.; tail 12 in. Incisors broad; body thick-set; eyes and ears small; muzzle short and blunt; legs short; tail flat, scaly and nearly naked; hind feet partly webbed; fur thick; dark brown above; dirty white below with a brown spot on chin.

*Distribution:* Abundant in all parts of the State where there are streams.

*Records:* By counties—Ballard (E. A. Whalin); Barren (J. O. Horning); Bath, abundant (C. F. Martin); Bell (R. H. Shipp); Boone (Maurer Bros.); Bracken (P. J. Arnold); Breathitt (G. W. Thompson); Bullitt (J. H. Sanders); Butler, abundant (F. H. Spickard); Calhoun (J. B. Gardner); Campbell (A. B. Regenstein, H. F. Link); Carlisle (B. A. Hensley); Carroll (G. C. Routt); Casey (E. Polston); Clay (L. A. Clark); Clinton (W. M. Watkins); Crittenden (J. R. Spencer); Daviess (H. S. Berry); Edmonson (W. G. Bullinger); Elliott (H. H. Mayse); Fayette (W. D. F.); Fleming (H. F. McKenney); Gallatin (F. Irwin); Graves (B. H. Mitchell); Grayson (J. S. Hughes); Green (J. A. Howard); Harlan (C. Powell, J. Borgan); Hart (J. S. Pullen); Henderson (D. W. Martin); Henry (D. D. Smith); Hickman (L. Jackson); Hopkins (M. M. Gordon); Jackson (W. R. Reynolds); Kenton (C. A. Wicklund); Knott (A. Campbell); Knox (E. Mayhew); Larue, abundant (J. N. Jones); Laurel (F. B. Wilson); Law-

rence (G. C. Baker); Leslie (M. O. Fairchild); Lewis (R. O. Bate); Lincoln (C. B. Elston); Livingston (H. McCandless); McCracken (J. R. Bird); McLean (R. H. Ford); Marion (H. J. Childress); Marshall (G. A. Basham); Martin (E. Cassady); Morgan (R. B. Rankin); Muhlenberg (F. O. Townes); Nelson (C. L. Hill); Ohio (A. Midkiff); Oldham (G. B. Nance); Owen (D. P. Morris); Owsley (P. M. Frye); Pike (W. M. Wesley); Powell (J. Kirk); Pulaski (D. Strunk); Taylor (J. L. Miller); Union (A. M. Allen); Washington, abundant (R. M. Heath); Webster (L. E. Cutler); Wolfe (W. R. Sebastian).

*Remarks:*

A typical water rat. In habits much like the beaver in that it builds chambers in or near the water, of mud, sticks and sod, in which it lives. The chambers are connected by tunnels with each other and with the water but the dwellings are not so well constructed and are far less pretentious than those of the beaver, and the muskrat builds no dams. Like the beaver, the muskrat cuts twigs very cleverly and like the beaver, also, it signals the approach of danger by slapping the water with its tail.

Muskrats spend much of their time in the water and even under the ice in the winter. They can remain submerged for a surprisingly long time for an air-breathing animal. They feed largely on aquatic vegetation.

The musk, a strong smelling substance, on account of which the animal is given its common name, is secreted by glands between the hind legs and has, in old males especially, a very powerful odor.

The fur is fine and durable and is much desired as an article of commerce. In its natural state it can be sold as mink or marten or the long hairs can be plucked and the silky underfur dyed to be sold under various trade names as different kinds of "seal". The muskrat is a valuable animal for this reason.

**5. *Microtus pennsylvanicus* Ord.—Meadow Mouse; "Field Mouse".**

*Description:* Length 6 in.; tail 1.5 in. Incisors broad; molars without roots; tail subcylindrical; body stout; legs short;

ears very short. Color dark brown or chestnut above with some black hairs on medium line; sides gray; belly grayish-white.

*Distribution:* Common throughout the State.

*Records:* "Field mice" are reported from practically every county in the State and while we have examined only a limited number of specimens, most of those which we have seen were of this species, and we presume that this is the common form in Kentucky. It is certainly abundant in the Blue Grass Region.

*Remarks:*

This "wee, sleekit, cow'rin, tim'rous beastie" is a well-known inhabitant of our fields and meadows. Meadow-mice usually build their nests in shallow excavations just beneath the sod and at harvest time they often construct homes of stripped husks and leaves under the shocks of corn. They prefer wet places and are most often found along the edges of streams or marshes. They swim well and often take to water when disturbed. They feed principally on grain, grass and seeds and where abundant become decided pests. They build runways and galleries through the grass and in winter tunnel under the snow.

Their sense of hearing is very acute but their sight is poor and they fall easy victims to owls, hawks, snakes and the rodent-eating carnivores.

One specimen, however, reversed the usual order in our laboratory last summer. A small male meadow mouse was placed in a cage of gartersnakes as food for the reptiles. Instead of submitting to his fate, however, he immediately seized the tail of one of the smaller snakes and began vigorously to chew it. The snake writhed, fought and squirmed, but the mouse retained his hold and finally, despite the frantic struggles of the snake, devoured not only the tail but part of the body of the reptile. Members of a class in zoology, who witnessed the performance, enthusiastically "rooted" for the mouse, and he seemed to appreciate the encouragement for never once did he allow himself to be shaken off until he had finished his meal. The next day he began on the tail of another snake, and to save the reptiles we were forced to remove him to quarters where he could do less damage.

Mr. Victor K. Dodge has called our attention to the fact that it is usual to find one pair of meadow mice only in one shock of corn, but that always two nests are found with the male in one nest and the female and young in the other. In families of these mice collected by Mr. Dodge in Bourbon County, January 26, 1922, the young in each case had been reduced to two and he noted that apparently the female could suckle only four young at a time.

Meadow mice are active and playful, easily domesticated, and make amusing little pets.

**6. *Microtus austerus* Leconte.—Prairie Meadow Mouse.**

*Description:* Length 5.5 in.; tail 1 in. Similar to preceding but smaller, color grizzly gray above with no brown or chestnut tints; underparts yellowish. Surface of molars very different from meadow mouse.

*Distribution:* Western part of State.

*Records:* Graves Co.; Hart Co.; Henderson; Owensboro (W. D. F.).

*Remarks:*

While hunting for snakes at the edge of a small pond in Hart County in August, 1921, we moved a pile of old rails and found a nest of this mouse at the bottom of the pile. The female had four young so tightly attached to her mammae that they retained their hold as she dashed about among the rails in her attempts to escape. When finally captured, the young were still holding firmly to the belly of the mother.

**7. *Reithrodontomys humulis merriami* Allen.—Harvest Mouse.**

*Description:* Length 4.5 in.; tail 2.25 in.; hind foot .6 in. Body slender; eyes and ears large; snout pointed; upper incisors grooved; upperparts dark brown tinged with cinnamon; a well defined dusky stripe down middle of back; ears blackish-brown; tail brown above, grayish-white below; underparts gray.

*Distribution:* Central part of State; probably rare.

*Records:* Lexington (A. H. Howell).

*Remarks:*

Our only records are those given by A. H. Howell in the Revision of the American Harvest Mice, U. S. Dept. of Agr. Bull. No. 36, 1914. p. 22.

**8. *Oryzomys palustris* Harlan.—Rice-field Mouse; "Rice Rat".**

*Description:* Length 9 in.; tail 4 in. Incisors narrow and not grooved; molars rooted; tail scantily haired and as long as head and body; ears very small, glossy brown inside and with a fringe of white hairs on the lower margin; color dull brown with a mixture of black hairs; ashy below; soles of feet naked; body large and rat-like.

*Distribution:* Probably rare.

*Records:* Barbourville (E. A. Goldman).\*

*Remarks:*

One specimen from Kentucky in the National Museum, recorded by Dr. Goldman in his monograph of the Rice Rats of North America.

**9. *Peromyscus leucopus* Rafin.—White-footed Mouse; Deer-Mouse**

*Description:* Length 6.5 in.; tail 3.25 in.; hind foot .75 in. Incisors narrow, compressed and not grooved; molars rooted and tuberculate, with tubercles in two series; body slender; eyes and ears large; tail closely haired, a little shorter than head and body and distinctly bicolored; proximal half of hind foot hairy; color grayish or fawn above with belly and feet pure white.

*Distribution:* Southern and central parts of State.

*Records:* Kentucky (Rafinesque); Hickman; Mammoth Cave (W. H. Osgood); Fayette Co.; Woodford Co. (W. D. F.).

*Remarks:*

This species was described from Kentucky by Rafinesque but the exact type locality was not given. His reference to the "barrens" has been interpreted by certain authors to mean

\*Goldman, E. A. The Rice Rats of North America. U. S. Dept. of Agr. N. A. Fauna. Biol. Sur. Bull. 43, 1913. p. 43.



"pine barrens", certainly a very erroneous interpretation, for Rafinesque, like all other Kentuckians, doubtless referred to the traditional area so well known as the "Barrens" in his day.

White-footed mice or deer mice are usually found in the woods where they often occupy abandoned birds nests in the summer and live much in the fashion of squirrels. They are largely nocturnal and are very timid and retiring. In the winter they are more often found beneath logs and brush where they construct neat little nests lined with fur, feathers and down. They are practically omnivorous in their diet, eating seeds, nuts, bark, meat, and sometimes the eggs of birds when opportunity offers. They are excellent climbers and very fleet of foot.

These mice are credited with having real musical ability and their songs have often attracted notice. Dr. Samuel Lockwood in the American Naturalist for 1871 described in great detail the singing of a captive specimen, even to the extent of setting its songs to music and publishing them under the titles of "The Wheel Song", "The Grand Role", etc

The mice of this genus are called "whitefooted mice" because of their white feet and legs, "deer mice" because of their speed, "wood mice" on account of their forest life, and "vesper mice" because they are usually seen in the evening.

They are timid, dainty, graceful little creatures and, like the meadow mice, are easily tamed and make interesting pets.

**10. *Peromyscus leucopus noveboracensis* Fisch.—Northern white-footed Mouse.**

*Description:* Very similar to preceding but somewhat larger, paler in color, fur longer and softer, and tail with denser hair.

*Distribution:* Northern and central parts of State.

*Records:* Eubank; Lexington (W. H. Osgood); Fayette Co. (W. D. F.).

*Remarks:*

The colors of this mouse are distinctly lighter and brighter than those of *P. leucopus* and the tail is not so decidedly bi-

colored. The forms in Fayette County seem to be more or less intermediate between the two species.

**11. *Peromyscus gossypinus megacephalus* Rhoads.—Cotton Mouse.**

*Description:* L. 6.5; tail 2.5 in. Upperparts cinnamon-brown with streaks of blackish; underparts gray; forearms dusky; feet white; tail brown above and white below.

*Distribution:* Purchase Region.

*Records:* Reelfoot Lake (W. D. F.).

*Remarks:*

A more southern form but with habits about the same as those of the other white-footed mice.

**12. *Peromyscus nuttalli* Harlan.—Golden Mouse.**

*Description:* Length 6 in.; tail 2.5 in. Above, bright golden cinnamon, especially bright on ears; back somewhat marked with dusky; underparts creamy white tinged with yellowish on abdomen.

*Distribution:* Southern and central parts of State; rare.

*Records:* West to central Kentucky; Eubank (W. H. Osgood).

*Remarks:*

We are not familiar with the habits of habitat of this mouse.

**13. *Peromyscus nuttalli aureolus* Aud. and Bach.—Southern Golden Mouse.**

*Description:* Very similar to preceding but smaller and with molar teeth narrower.

*Distribution:* Purchase Region if at all.

*Records:* Fulton Co. (W. D. F.).

*Remarks:*

The only specimen of the Golden Mouse which we have seen in Kentucky was from Fulton County. It was much smaller than the type form but seemed to be mature. We believe it was the southern variety but were not able to preserve the specimen for authoritative determination.

#### 14. *Neotoma pennsylvanica* Stone.—Wood Rat.

**Description:** Length 16 in. Tail nearly as long as body; color dusky above; reddish on sides; belly and feet white; ears large; vibrissae very long; tail dusky above, lighter below, very hairy, the scales almost entirely hidden by the hairs; teeth not tubercular.

**Distribution:** Probably abundant in all parts of the State where there are caves and rock-houses.

**Records:** Hardin Co. (H. P. Miller; G. Pirtle; W. D. F.); Bell Co. (W. D. F.).

**Remarks:**

We secured four specimens of this rat from Cow Cliff near Howe's Valley in Hardin County in one night by the use of dead-falls and steel traps, and we are assured by farmers and trappers in many localities that rats with "big ears, bulging eyes and long whiskers" are abundant wherever there are caves. We also found a dead specimen on the railroad track near Pineville.

The pupils of Pine Mountain Settlement School in Harlan County state that the caves of that region contain rats which are quite different from ordinary rats and that they have seen albino specimens. We have not been able as yet to secure a specimen or skin of one of these rats from this region but at this writing the boys at the school are endeavoring to trap them.

Professor Garman reports of "cliff rat" in Kentucky which may be this species or the more southern form *N. floridana* Ord.

Darwin in his *Origin of Species* (Chap. V; Appleton Ed. p. 171) mentions a blind rat from Kentucky caves which he places in the genus *Neotoma*. We have never seen a specimen of this although our recent investigations of cave fauna have been somewhat extensive, and we know of no other mention of it in literature.

Our common introduced rat, *Mus norvegicus* Erxl., is often found in caves and mines, but the woods rat may at once be distinguished by its hairy tail, long vibrissae, large ears and flat teeth.

#### 15. *Arctomys monax* Linn.—Woodchuck; "Ground-Hog".

**Description:** Length 20 in.; tail 5 in. Upper skull straight

and very thick and heavy; cheek pouches rudimentary; ears small; body thick-set, heavy and clumsy; legs short; thumb nail broad and flat; tail short and brushy; fur coarse; color, grizzly black above; belly rusty; feet black.

**Distribution:** Fairly common in most parts of the State.

**Records:** By counties—Ballard, few (E. A. Whalin); Barren (J. O. Horning); Bath (C. F. Martin); Bell (R. H. Shipp); Boone, numerous in 1921 (W. D. Sutton); Bracken (P. J. Arnold); Breathitt (G. W. Thompson); Butler (R. Hood); Calloway (J. B. Gardner); Campbell (H. F. Link, A. B. Regenstein); Carlisle (B. A. Hensley); Carroll (M. L. Downes); Casey (J. Wells); Clay (L. A. Clark); Clinton (W. M. Watkins); Crittenden (J. R. Spencer); Cumberland (C. S. Payne); Edmonson (W. G. Bullinger, A. H. Howell); Elliott (H. H. Mayse); Fayette (W. D. F.); Fleming (H. F. McKenney); Gallatin (W. D. Jackson); Graves (T. B. Withers); Grayson (J. S. Hughes); Green (J. A. Howard); Harlan, abundant (W. Green); Hart, abundant (J. S. Pullen); Henderson (D. W. Martin); Henry (L. S. Rhoades); Hickman (L. Jackson); Jackson (W. R. Reynolds); Kenton (J. Williams, H. Walton); Knott (A. Campbell); Knox (E. Mayhew); Larue (J. N. Jones); Laurel (F. B. Wilson); Lawrence (G. C. Baker); Leslie (M. O. Fairchild); Lewis (R. O. Bate); Lincoln (C. B. Elston); Livingston (C. H. Webb); Logan (W. R. Whitlow); McCracken (J. R. Bird); McLean (R. H. Ford); Marion (H. J. Childress); Martin (E. Cassady); Morgan (R. B. Rankin); Nelson (C. L. Hill); Ohio (S. O. Keown); Oldham (G. B. Nance); Owen (D. P. Morris); Owsley (P. M. Frye); Pike (W. M. Wesley); Pulaski (R. Fisher); Taylor (J. L. Miller); Union (A. M. Allen); Washington, abundant (R. M. Heath); Wolfe, abundant (W. R. Sebastian).

**Remarks:**

A lazy, sluggish animal which spends most of its time in its burrow and emerges only to eat or to bask in the sun. It feeds almost entirely on vegetation and often does serious damage in vegetable gardens.

Woodchucks usually dig large, irregular burrows in soft ground to which they retreat when disturbed. They are also known to live in hollow logs and in caves.

Although sluggish in disposition, the woodchuck can defend

itself in no mean fashion when cornered as its teeth are powerful and sharp. Moreover its skin is very thick and tough, and its skull thick and heavy, so that many a hunter has wondered why he missed an easy shot with a shotgun when in reality it was no fault of marksmanship but simply because the shot did not penetrate the tough skin.

The woodchuck is known locally as the "ground hog" and is watched for on the second of February in accordance with the old superstition that according to whether it sees or does not see its shadow, the time of the arrival of spring can be foretold.

The flesh of the woodchuck is said to be excellent and the skin makes a good leather.

**16. *Tamias striatus* Linn.—Chipmunk; "Ground Squirrel".**

*Description:* Length 12 in.; tail 5 in. Upper skull convex and very thin; cheeks with large pouches; thumb with well developed nail; one premolar on each side above and below; color reddish-brown with two fine black stripes and two whitish ones on the back; white stripe above and below the eye; belly white; tail narrow.

*Distribution:* Abundant in all parts of the State.

*Records:* By counties—Anderson (W. D. F.); Ballard (C. J. Barlow); Barren (R. M. Guthrie); Bath (C. F. Martin); Bell (R. H. Shipp); Boone (W. D. Sutton); Bourbon (W. D. F.); Bracken (P. J. Arnold); Breathitt (G. W. Thompson); Bullitt (J. H. Sanders); Calloway (J. B. Gardner); Campbell (A. B. Regenstein, H. F. Link); Carlisle (B. A. Hensley); Carroll (G. C. Routt); Casey (J. Wells); Clay (L. A. Clark); Clinton (W. M. Watkins); Elliott (H. H. Mayse); Fayette (W. D. F.); Fleming (H. F. McKenney); Graves (B. H. Mitchell); Grayson (J. S. Hughes); Green (J. A. Howard); Hart, "multitudes" (J. S. Pullen); Henry (L. S. Rhoades); Hickman (L. Jackson); Hopkins (M. M. Gordon); Kenton (C. A. Wicklund); Knott (A. Campbell); Knox (E. Mayhew); Laurel (F. B. Wilson); Lawrence (G. C. Baker); Leslie (M. O. Fairchild); Lewis (R. O. Bate); Lincoln (C. B. Elston); McLean (R. H. Ford); Marion (H. J. Childress); Martin (E. Cassady); Muhlenberg (F. O. Townes); Nelson (C. L. Hill); Ohio (L. Hughes); Owen (D. P. Morris); Owsley (P. M. Frye); Pike (W.

M. Wesley); Pulaski (W. C. Wilson); Webster (L. E. Cutler); Wolfe, abundant (W. R. Sebastian); Woodford (W. D. F.).

*Remarks:*

Generally found on or near the ground, and especially about old rail and stone fences. They live in burrows which they construct with much cleverness, carefully removing all of the dirt from about the entrances and carrying it in their cheek-pouches to some distance to prevent their home from being discovered.

They do considerable damage to corn and fruits which they carry away in their cheek-pouches. These pouches are surprisingly large, extending back almost to their shoulders. They are active and sometimes quite noisy, especially when an enemy is sighted, in which case they signal to each other by loud, shrill chirrups. They are good climbers and often devour the eggs and young of birds.

In the winter they usually hibernate in their burrows, although in open seasons they have been known to remain active in this State the year round.

**17. *Sciurus carolinensis* Gmel.—Gray Squirrel.**

*Description:* Length 18 in.; tail 8 in. Upper skull convex; molars rooted, five on each side above, four below; no cheek pouches; eyes large; thumb nail rudimentary; tail long and bushy; color yellow-gray above; face tawny; sides rusty; belly white; hairs of tail yellow at base, black in middle and white at tips.

*Distribution:* Abundant throughout the State.

*Records:* By counties—Anderson (W. D. F.); Ballard (E. A. Whalin); Barren (J. O. Horning); Bath (C. F. Martin); Bell (R. H. Shipp); Boone (J. Fowler); Bourbon (V. K. Dodge); Bracken (P. J. Arnold); Breathitt (G. W. Thompson); Bullitt (J. H. Sanders); Butler, abundant (W. A. Kelly); Calloway (J. B. Gardner); Campbell (A. B. Regenstein, H. F. Link); Carlisle (B. A. Hensley); Carroll (M. L. Downes); Casey (J. Wells); Clark (W. D. F.); Clay (L. A. Clark); Clinton (W. M. Watkins); Crittenden (J. R. Spencer); Cumberland (C. S. Payne); Daviess (J. W. Whitehouse); Edmonson (W. G. Bullinger); Elliott (H. H. Mayse); Fayette (W.



D. F.); Fleming (H. F. McKenney); Fulton (J. W. Mayse); Gallatin (B. K. Bailey); Graves (B. H. Mitchell); Grayson (J. S. Hughes); Green (A. Howard); Harlan, abundant (R. T. Harrison); Hart, numerous (J. S. Pullen); Henderson (F. Street); Henry, abundant (L. S. Rhoades); Hickman (L. Jackson); Hopkins (M. M. Gordon); Jackson (W. R. Reynolds); Jefferson (W. D. F.); Jessamine (W. D. F.); Kenton (C. A. Wicklund); Knott (A. Campbell); Knox (E. Mayhew); La-rue (J. N. Jones); Laurel (F. B. Wilson); Lawrence (G. C. Baker); Leslie (M. O. Fairchild); Lewis (R. O. Bate); Lincoln (C. B. Elston); Livingston (G. L. Crawford); Logan (W. R. Whitlow); McCracken, plentiful (J. R. Bird); McLean (R. H. Ford); Marion (H. J. Childress); Marshall (G. O. Basham); Martin (E. Cas-sady); Mercer (W. D. F.); Morgan (R. B. Rankin); Muhlenberg (F. O. Townes); Nelson (C. L. Hill); Ohio (I. Payton); Oldham (G. B. Nance); Owen (D. P. Morris); Owsley (P. M. Frye); Pike (W. M. Wesley); Pul-aski (R. Fisher); Shelby (W. D. F.); Taylor (J. L. Miller); Union (A. M. Allen); Washington, abundant (R. M. Heath); Webster (L. E. Cutler); Wolfe (W. R. Sebastian); Woodford (W. D. F.).

#### Remarks:

This is the commonest squirrel in Kentucky, and where it is protected has established itself in towns, cities and parks. Gray squirrels live in cavities in trees and store their food in these nests. Sometimes a number of individuals will occupy the same nest, although the old males are inclined to be ugly and ill-tempered when this is done. They are most active in the early morning and late afternoon, during which periods they are very industrious.

These squirrels soon become accustomed to man and may be easily induced to come to dwellings and even to individuals for food. They do some slight damage to birds and their eggs and considerable damage to corn in localities where they are numerous. Their food varies, however, with the season of the year, and in some sections of Kentucky the greeting between rustics "What are they a-workin' on now?" which is usually meaningless to the uninitiated, refers to the activities of the squirrels and the progress of the crops.

Albino gray squirrels are occasionally reported; the Univer-

sity of Kentucky possesses an example of this form. Albinos are partially or entirely white, have pink eyes and are be-lieved to be deaf.



Fig. 83

#### AN ALBINO SQUIRREL

Photograph of a mounted specimen in the collection of the University of Kentucky

Gray squirrels are slaughtered in large numbers each year for their flesh but seem to be holding their own fairly well in the more densely wooded regions of the State.

**18. *Sciurus rufiventer neglectus* Gray.—Fox Squirrel; "Red Squirrel."**

*Description:* Length 21—24 in. Above, grizzled yellowish-gray with dusky markings, darker on the head; ears and feet reddish; below, brick-red, with sometimes a touch of white between the front legs; tail long and bushy, red with black markings; colors variable.

A darker phase is found in Kentucky which is sometimes almost entirely black.

*Distribution:* Common throughout the State.

*Records:* By counties—Ballard, few (E. A. Whalin); Barren (J. O. Horning); Bath (C. F. Martin); Bell (R. H. Shipp); Boone (J. Fowler); Bourbon (V. K. Dodge); Bracken (P. J. Arnold); Breathitt (G. W. Thompson); Butler (F. H. Spickard); Campbell (A. B. Regenstein, H. F. Link); Carroll (M. L. Downes); Casey (J. Wells); Clay (L. A. Clark); Clinton, very few (W. M. Watkins); Crittenden (J. R. Spencer); Daviess (J. W. Whitehouse); Edmonson (W. G. Bullinger); Elliott (H. H. Mayse); Fayette (L. Moore); Fleming (H. F. McKenney); Fulton (M. Reid); Gallatin (B. K. Bailey); Grayson (J. S. Hughes); Green (J. A. Howard); Hart, few (R. L. Boyd); Henderson (F. Street); Henry, abundant (L. S. Rhoades); Hickman (L. Jackson); Hopkins (M. M. Gordon); Jackson (W. R. Reynolds); Kenton (C. A. Wicklund); Laurel (F. B. Wilson); Lawrence (G. C. Baker); Leslie (M. O. Fairchild); Lewis (R. O. Bate); Livingston (Dr. Gardner); McCracken, few (J. R. Bird); MeLean (R. H. Ford); Marion (H. J. Childress); Marshall (G. O. Basham); Nelson (C. L. Hill); Ohio (S. O. Keown); Oldham (G. B. Nance); Owen (D. P. Morris); Owsley (P. M. Frye); Pike (W. M. Wesley); Pulaski (R. Meece); Taylor (J. L. Miller); Union (A. M. Allen); Washington, abundant (R. M. Heath); Webster (L. E. Cutler).

*Remarks:*

Next to the gray squirrel, this is the most abundant squirrel in Kentucky and in some localities is more numerous than the gray species. It is a fine, large, vigorous squirrel and its flesh is excellent. It is often called the "red" squirrel but is entirely distinct from the much smaller northern form to which

the name red squirrel is properly applied.\* The fox squirrel is, however, decidedly red, even the bones showing this color distinctly.

Fox squirrels are big energetic fellows and are active most of the winter. They usually live in hollow trees and eat a wide variety of food.

They are among the largest of the squirrels, are the best of all the squirrels for food, do but little damage to birds, and should be encouraged and protected.

**19. *Sciurus niger* Linn.—Southern Fox Squirrel.**

*Description:* Length 26 in.; tail 12 in. Varying in color from gray to black but with top of head always black and with ears and nose always white; tail very large and bushy; feet very large; fur coarse.

*Distribution:* No recent records.

*Records:* Kentucky (Audubon and Bachman).

*Remarks:*

This is the largest of all the true squirrels and is easily recognized by its size and by its white nose and ears. It is partial to pines and is not often found except in rather dense forests.

Professor Garman lists this squirrel from Kentucky on the authority of Audubon and Bachman, as above, but we can secure no evidence of its present occurrence in the State. We have talked with many experienced squirrel hunters and have never found one who has seen a fox squirrel with any white on its ears or nose; likewise an examination of a large number of skins has failed to discover a skin of this species. We doubt if it now occurs in Kentucky.

**20. *Glaucomys volans volans* Linn.—Flying Squirrel.**

*Description:* Length 10 in.; tail 4 in. Dull yellow-brown

\*Apparently the common northern and eastern red squirrel or "chickaree" (*Sciurus hudsonicus leucus* Bangs) is never found in Kentucky.

Careful inquiries and investigations, especially in those parts of the State where this squirrel would most likely have become established have failed to yield a single record.

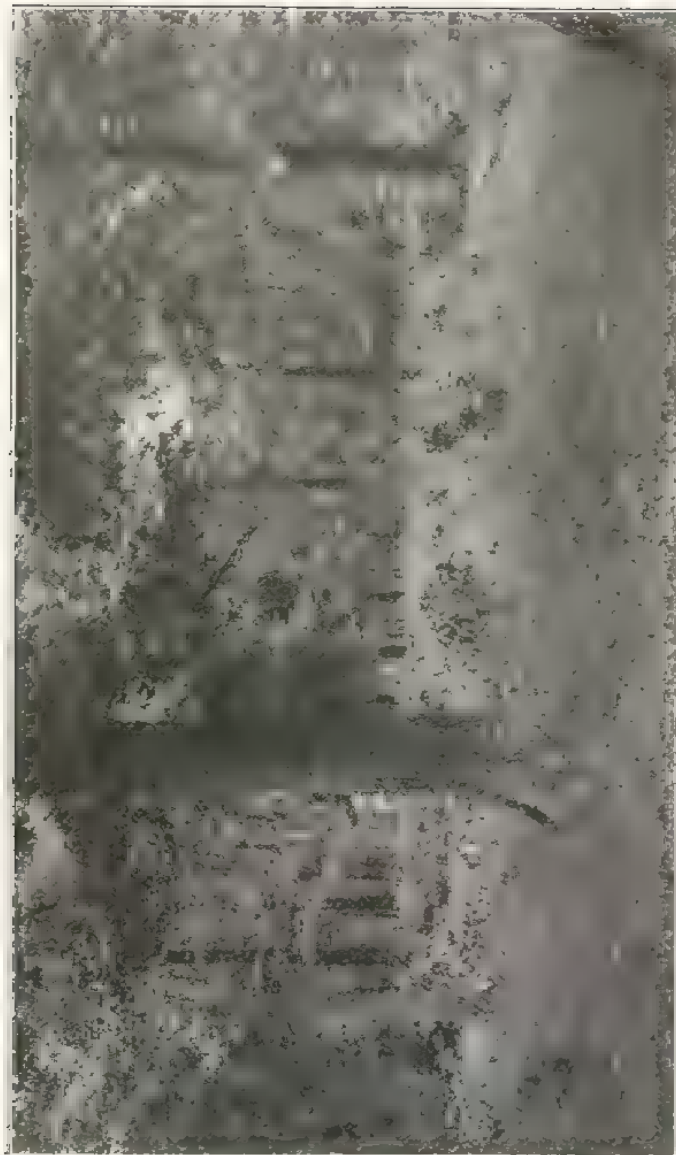


Photo by W. R. Johnson

 FIG. 81  
 THE FLYING SQUIRREL IN FLIGHT  
 A forest scene in Fulton county

above; white below; no cheek pouches; ears large; fur soft, thick and mole-like; the skin of the sides produced to form a broad membrane connecting the front and hind legs; toes white in winter.

*Distribution:* Common throughout the State.

*Records:* By counties—Ballard (E. A. Whalin); Barren (J. O. Horning); Bath (C. E. Byron); Bell (R. H. Shipp); Boone (W. D. Sutton); Bracken (P. J. Arnold); Breathitt (G. W. Thompson); Bullitt (J. H. Sanders); Butler (F. H. Spickard); Calloway (J. B. Gardner); Campbell (A. B. Regenstein, H. F. Link); Carlisle (B. A. Hensley); Carroll (G. C. Routt); Casey (J. Wells); Clay (L. A. Clark); Clinton (W. M. Watkins); Crittenden (J. R. Spencer); Cumberland (C. S. Payne); Edmonson (W. G. Bullinger); Elliott (H. H. Mayse); Fayette (A. M. Peter, H. E. Curtis, G. H. Vansell); Fleming (H. F. McKenney); Gallatin (B. K. Bailey); Graves (W. A. Humphries); Grayson (J. S. Hughes); Green (J. A. Howard); Hart, abundant (J. S. Pullen); Henry (L. S. Rhoades); Hickman (L. Jackson); Hopkins (M. M. Gordon); Jackson (W. R. Reynolds); Kenton (C. A. Wicklund); Knott (A. Campbell); Knox (E. Mayhew); Larnie, abundant (J. N. Jones); Laurel (F. B. Wilson); Lawrence (G. C. Baker); Leslie (M. O. Fairchild); Lewis (R. O. Bate); Lincoln (C. B. Elston); Livingston (L. H. Adams); Logan (W. R. Whitlow); McCracken (J. R. Bird); McLean (R. H. Ford); Marion (H. J. Childress); Marshall (G. O. Basham); Martin (E. Cassady); Muhlenberg (F. O. Townes); Nelson (C. L. Hill); Owen (D. P. Morris); Owsley (P. M. Frye); Pike (W. M. Wesley); Pulaski (D. Strunk, A. H. Howell); Taylor (J. L. Miller); Union (A. M. Allen); Webster (L. E. Cutler); Wolfe (W. R. Sebastian).

*Remarks:*

The so-called "flying" squirrel does not of course "fly" in the usual sense of the word, but simply uses the membranous spreading skin as a parachute in descending in a sailing fashion from one tree to another.

These squirrels are almost entirely nocturnal and so are seldom seen, and in addition have excellent protective coloration, so that they may be more abundant in Kentucky than is generally supposed.

They are really quite attractive in appearance, both because



of their delicate coloration and their very soft fur, and as Stone observes "they are such beautiful, gentle, dreamy-eyed little forest folk, that one cannot help wishing to know more about them".

They make their nests in rotted branches which they carefully hollow out to form cavities, and have been known to appropriate and enlarge old woodpecker-holes. Their habits are little known.

**21. *Glaucomys volans saturatus* Howell.—Southeastern Flying Squirrel.**

*Description:* Length 9 in.; tail 3.5 in. Similar to preceding but smaller, upperparts much darker at all seasons, and toes not whitened in winter.

*Distribution:* Not known.

*Records:* Hickman (A. H. Howell).

*Remarks:*

Known in Kentucky only from the record of Dr. Howell as reported in his "Revision of the American Flying Squirrels", N. A. Fauna, U. S. Dept. of Agr. Biol. Survey No. 44. p. 23.

**ORDER INSECTIVORA.—THE INSECT-EATERS.**

**22. *Blarina brevicauda carolinensis* Bach.—Mole Shrew; Short-tailed Shrew.**

*Description:* Length 4 in.; tail .75 in. Mouse-like; eyes very small; ears not visible; snout pointed; fore-feet not fitted for digging; body stout; tail short; color leaden-gray, tinged with brownish above; very little lighter below.

*Distribution:* Probably common throughout the State but we have collected them only in the Blue Grass Region.

*Records:* Fayette Co.; Woodford Co.; Bourbon Co. (W. D. F.).

*Remarks:*

Shrews are among the smallest of all mammals, and this fact together with their nocturnal habits and largely subterranean life, probably explains why they are so seldom seen and so little known.

They live in shallow burrows beneath the sod and in runways in the grass but are not as helpless above ground as are the moles.

They are entirely carnivorous, feeding chiefly on insects. It is said that they are really very blood-thirsty little creatures and they have been known to attack and kill field mice and fledgling birds. When disturbed or frightened they emit a disagreeable odor suggestive of that of a mole.

They are of course harmless to man as they do not destroy vegetation and are indeed of some value on account of their insectivorous habits.

**23. *Blarina parva* Say.—Brown Shrew.**

*Description:* Length 3 in.; tail .75 in. Very small; eyes extremely small; no external ears; body slender; tail about one-fourth as long as head and body; color rich dark brown above; ashy below.

*Distribution:* Probably same as preceding.

*Records:* Fayette Co. (G. H. Vansell, W. D. F.); Lexington (species) H. Garman.

*Remarks:*

Professor Allen\* believes that this is merely a variety of the preceding and Dr. Herrick fully concurs in this view.\*\*

Superficially the two forms appear quite distinct.

**24. *Scalopus aquaticus machrinus* Rafin.—Mole.**

*Description:* Length 5—6 in.; body stout, thick, clumsy; no distinct neck; snout pointed; eyes partly concealed by skin; tail nearly naked, shorter than head; color sepia or mummy-brown above, pinkish on nose; underparts grayish-brown; pelt soft and velvet like; hair fine and silky; front toes webbed and fitted for digging.

*Distribution:* Abundant throughout the State.

*Records:* By counties—Anderson (W. D. F.); Ballard, abundant (E. A. Whalin); Barren (J. O. Horning); Bath, "by the hundreds" (C. F. Martin); Bell (R. H. Shipp);

\*Allen, J. A. Bulletin No. 8. Museum Comparative Zoology, Cambridge.

\*\*Herrick, C. L. Mammals of Minnesota, p. 45.

Boone (H. Kirk); Bourbon (W. D. F.); Bracken (P. J. Arnold); Bullitt (J. H. Sanders); Butler, "doing damage to fields" (F. H. Spiekard); Calloway (J. B. Gardner); Campbell (A. B. Regenstein, H. F. Link); Carlisle (B. A. Hensley); Carroll (M. L. Downes);



Fig. 8.  
THE MINER.  
A common mole with forefeet fitted for digging.

Casey (J. Wells); Clay (L. A. Clark); Clinton (W. M. Watkins); Crittenden (J. R. Spencer); Cumberland (C. S. Payne); Daviess (H. Berry); Edmonson (W. G. Bulfinger); Elliott (H. H. Mayse); Fayette (C. S. Rafinesque 1832, H. H. T. Jackson 1915, abundant 1921 W. D. F.); Fleming (H. F. McKinney); Gallatin (B. K. Bailey);

Graves (B. H. Mitchell); Grayson (J. S. Hughes); Green (J. A. Howard); Harlan, plentiful (R. T. Harrison); Hart, "too many" (J. S. Pullen); Henderson (E. Allen); Henry (L. S. Rhoades); Hickman (L. Jackson); Hopkins (M. M. Gordon); Jefferson (W. D. F.); Jessamine (C. S. Rafinesque, 1832); Kenton (C. A. Wicklund); Knott (A. Campbell); Knox (E. Mayhew); Larue, "lots of them" (J. N. Jones); Laurel (F. B. Wilson); Lawrence (G. C. Baker); Leslie (M. O. Fairchild); Lewis (B. O. Bate); Lincoln (C. B. Elston); Livingston (L. C. Pace); Logan (W. R. Whitlow); McCracken (J. R. Birl); McLean (R. H. Ford); Marion (H. J. Childress); Marshall (G. O. Basham); Martin (E. Cassady); Mercer (C. S. Rafinesque, 1832); Muhlenberg (F. O. Townes); Nelson (C. L. Hill); Ohio (J. S. Hughes); Oldham (G. B. Nance); Owsley (P. M. Frye); Pike (W. M. Wesley); Pulaski (W. C. Wilson, H. H. T. Jackson); Taylor (J. L. Miller); Union (A. M. Allen); Washington, plentiful (R. M. Heath); Webster (L. E. Cutler); Wolfe (W. R. Sebastian); Woodford (H. H. T. Jackson).

#### Remarks:

It is very interesting to note that our common mole, which is abundant not only in this State but also in Illinois, Indiana, Ohio, Michigan and Iowa, was originally described by Rafinesque\* from specimens found at Lexington.

This little pest is well known on account of the damage it does in plowing up the sod of lawns and gardens. It spends practically all of its life underground, either in the upper tunnels ("mole hills") so familiar at the surface, or in deeper tunnels where it burrows in search of worms and larvae or to which it retreats in very dry or cold weather. Its nest is usually about a foot under the surface, below thick-rooted grasses, where it brings forth two or three young a year; the young are naked when born and do not get their hair until nearly one-third grown.

Moles destroy some insects and are beneficial to that extent, but they are a great nuisance in destroying sod, in tearing up tender plants, and in causing the slipping of soils on hillsides.

\*Rafinesque, C. S. Atlantic Journal, Vol. 1, p. 61 1832

Jackson does not credit this mole as appearing in the eastern part of the State\* but our records from eastern counties show that moles of some species are abundant. It may be, however, that the variety *aquaticus* is represented in this section; we have not examined specimens from the mountain districts.

#### ORDER CHIROPTERA.—THE BATS.

##### 25. *Vespertilio lucifugus* Leconte.—Little Brown Bat.

*Description:* Length 3.4 in.; tail 1.5 in.; ear .5 in. Shining



FIG. 56. Photo by A. W. Miller.  
WHERE THE BATS CONGREGATE  
Typical interior of a Kentucky cave.

brown above; paler and somewhat yellowish below; wing membranes naked except a narrow strip next to body; head large; snout blunt; ears blunt at tip and somewhat emarginate on outer side; point of tail exserted.

\*Jackson, H. H. T. U. S. Dept. of Agr. Biol. Survey Bull. 38, 1915 p. 28.

*Distribution:* Abundant throughout the State; especially in caves.

*Records:* Lexington; Bourbon Co.; Hart Co.; Woodford Co.; Edmonson Co.; Boones Cave, Dix River (W. D. F.).

#### *Remarks:*

This is apparently the dominant bat of the Kentucky caves and in some localities is extremely abundant. In some of the larger caverns of the State these animals may be found by the thousands and the guano accumulates on the floor by the ton. This guano is extremely rich in nitrogen and makes a fine fertilizer. In the early days many of these caves were worked for the saltpeter which was used in the manufacture of gunpowder; whether the guano of the caves was utilized in the same way we do not know.

Little is known of the life-history or habits of bats. They are almost entirely nocturnal and very secretive in their ways. During the day they gather, sometimes in large numbers, in dark places where they hang head downward apparently asleep. At dusk they start on their foraging which is largely the capture of insects on the wing. The young often hang to the body of the mother during her flight.

The eyes of bats are small and very sensitive to light so that they do not see well in the daytime, a condition which has given rise to the erroneous expression "blind as a bat". The tactile senses are, however, remarkably developed as illustrated by the experiment of Spallanzani who covered the eyes of bats with varnish and released them in a room filled with wires and strings in a network, which obstacles were avoided without difficulty by the bats in their rapid flights. The wings of a bat are simply webbed fore-feet, the extremely elongated fingers being connected with each other and with the body and tail by a thin membrane.

Bats are entirely harmless, in spite of many superstitions to the contrary, and do much good in destroying insects.

##### 26. *Vespertilio subulatus* Say.—Say's Bat.

*Description:* Length 3.5 in.; tail 1.5 in.; ear .7 in. Dark brown above; darker on rump; light gray to tawny be-



low; wing membranes very thin and naked; head slender; ears long and blunt at tips; points of tail exerted.

*Distribution:* Probably same as preceding.

*Records:* Caves near Lexington (H. Garman).

*Remarks:*

Very similar to the preceding but with narrower head, longer ears, much thinner wing-membranes, and with fur darker above and lighter below.

**27. *Adelonycteris fuscus* Beauv.—Large Brown Bat.**

*Description:* Length 4.6 in.; expanse of wings 12 in.; tail 1.5 in.; ear .5 in. Face naked; lips not whiskered; ear elliptical, tip blunt and slightly turned backward; fur long and silky, dark brown above, slightly lighter below; wing membranes almost naked.

*Distribution:* Probably occurs throughout the State.

*Records:* Fayette Co.; Jessamine Co.; Jefferson Co.; Woodford Co. (W. D. F.).

*Remarks:*

Our largest bat. We have seen it most often in tobacco-barns and in deserted buildings, and it occasionally enters houses.

**28. *Adelonycteris serotinus* Schreb. Long-eared Bat.**

*Description:* Length 4.5 in.; tail 1.5 in.; ear .7 in. Front of head naked above; lips not whiskered; ear long and deeply emarginate; fur silky and of a nearly uniform dull brown above and below.

*Distribution:* Probably rare.

*Records:* Lexington, Aug., 1893 (H. Garman).

*Remarks:*

Our only record is that of Professor Garman of a specimen taken on the Experiment Station farm at the University of Kentucky.

**29. *Atalapha noveboracensis* Erxl.—Red Bat.**

*Description:* Length 4.4 in.; expanse of wings 11 in.; tail 2

in.; ear .5 in. Interfemoral membrane densely furred; color rusty red or reddish-brown above; lighter below; ear shorter than head, furred at base; snout flat and projecting beyond lower lip.

*Distribution:* Fairly common throughout the State.

*Records:* Short Cave (H. Allen); Graves Co.; Fayette Co.; Bell Co.; University of Kentucky campus, female with two young July 12, 1920; Lexington, Apr. 29, 1922 (W. D. F.).

*Remarks:*

Generally found in caves, sometimes in mines, and occasionally in forests and parks.

A large bat easily recognized by its reddish appearance.

**30. *Corynorhinus macrotis* Leconte.—Big-eared Bat.**

*Description:* Length 4.2 in.; tail 1.7 in.; ears 1.1 in.; expanse of wing 10 in. Ears nearly twice the length of head, and joined in front, with the outer borders smooth; lower lip not movable; a round swelling on each side of head between eye and nostril; color yellow-brown above; below grayish-white with throat darker.

*Distribution:* Probably rare.

*Records:* Kentucky (Stone and Cram); Bowling Green (H. Garman).

*Remarks:*

Professor Garman records a specimen received from Miss Sadie Price, collected at Bowling Green.

**31. *Vesperugo carolinensis* Geoff.—Carolina Bat.**

*Description:* Length 3.5 in.; tail 1.5 in.; ear .5; expanse of wings 9 in. Ear as long as head; foot one-fourth as long as fore-arm; ear oval with blunt tip; face hairy; no color in second digital interspace; color dusky brown above; lighter below.

*Distribution:* Rare.

*Records:* Short Cave, Ky. (H. Allen).

*Remarks:*

A specimen in the U. S. Museum of Comparative Zoology

(No. 5992) from Kentucky is described by Dr. Allen in his "Monograph of the Bats of North America" page 127.\*

We have no other record from the State.

**32. *Lasiannucteris noctivagans* Leconte.—Silvery Bat.**

*Description:* Length 4 in.; tail 1.5 in.; ear .6 in.; expanse of wings 11 in. Interfemoral membranes sparsely haired; ear oval; snout broad; nostrils far apart; fur black with silvery tips to hairs.

*Distribution:* Eastern mountains.

*Records:* Cumberland River, Bell Co. (W. D. F.).

*Remarks:*

Generally found in dark woods along streams.

ORDER UNGULATA.—THE HOOFED MAMMALS.

**33. *Odocoileus virginianus* Bodd.—Virginia Deer.**

*Description:* Length 6 ft.; height at shoulder 3 ft. Summer: chestnut above with a black band on chin; underparts and inside of legs white; tail brown above, white below. Winter: upperparts grayish, lighter around the eye. Antlers 20—24 inches, of three nearly equal prongs with a short spike near base.

*Distribution:* Principally in eastern mountains and in western part of State.

*Records:* Lee Co. (W. R. Sebastian); Powell Co. (A. Ballard); Bell Co. (R. H. Shipp); Crittenden Co. (J. R. Spencer); Henderson Co. (A. Cohen); Laurel Co. (F. B. Wilson); Furnace, Powell Co. (A. Ballard).

*Remarks:*

Deer are increasing wherever they are found in the State due to the protection afforded them in recent years. It is impossible to know, however, whether most of the animals are descendants of original or of introduced stock.

Mr. Claude Meredith of the State Game and Fish Commission reports that the native deer are increasing rapidly in the

\*Allen, R. U. S. Nat. Mus. Bull. 43. 1893.

State Game Preserve in Trigg and Lyon Counties, and that in this preserve there are also about forty English fallow deer.

ORDER CARNIVORA.—THE FLESH-EATERS.

**34. *Procyon lotor* Linn.—Raccoon; "Coon".**

*Description:* Length 33 in.; tail 10½ in. Plantigrade; head broad and depressed; snout long and sharp; ears large, hairy and rounded above; color grayish with hairs black-tipped; tail bushy with four or five black rings; cheek-patch black; soles of feet naked; molars large and tuberculate.

*Distribution:* Abundant in all wooded regions.

*Records:* By counties—Ballard, abundant (E. A. Whalin); Barren (J. O. Horning); Bath, abundant (C. F. Martin); Bell (R. H. Shipp); Boone (C. Pope); Bracken (P. J. Arnold); Breathitt (G. W. Thompson); Bullitt (J. H. Sanders); Butler (R. Norris); Calloway (J. B. Gardner); Campbell (A. B. Regenstein, H. F. Link); Carlisle (B. A. Hensley); Carroll (M. L. Downes); Casey (J. Wells); Clay (L. A. Clark); Clinton (W. M. Watkins); Crittenden (J. R. Spencer); Cumberland (C. S. Payne); Daviess (J. W. Whitehouse); Edmonson (W. G. Bullinger); Elliott (H. H. Mayse); Fayette (J. W. Bitterman); Fleming (H. F. McKenney); Fulton (H. T. Slade); Gallatin (F. Irwin); Graves (B. H. Mitchell); Grayson (J. S. Hughes); Green (J. A. Howard); Harlan (J. Pope); Hart, scarce (J. S. Pullen); Henderson (A. Cohen); Henry, abundant (L. S. Rhoades); Hickman (L. Jackson); Hopkins (M. M. Gordon); Jackson (W. R. Reynolds); Kenton (C. A. Wicklund); Knott (W. Cornett); Knox (E. Mayhew); Larue, many skins sold (J. N. Jones); Laurel (F. B. Wilson); Lawrence (G. C. Baker); Leslie (M. O. Fairchild); Lewis (R. O. Bate); Lincoln (C. B. Elston); Livingston (E. Marshall); Logan (W. R. Whitlow); McCracken (J. R. Bird); McLean (R. H. Ford); Marion (H. J. Childress); Marshall (G. O. Basham); Martin (E. Cassady); Morgan (R. B. Rankin); Muhlenberg (F. O. Townes); Nelson (C. L. Hill); Ohio (A. Midkiff); Oldham (G. B. Nance); Owen (D. P. Morris); Owsley (P. M. Frye); Pike (W. M. Wesley, M. Burke); Powell (T. Abner); Pulaski (R. Meece); Taylor (J. L. Miller); Union (A. M. Allen); Washington, scarce (R. M. Heath); Webster (L. E. Cutler); Wolfe (W. R. Sebastian); Woodford (W. D. F.).

*Remarks:*

Notorious for its depredations upon the farmer and the poultry man. Chiefly nocturnal and is usually hunted at night with dogs, axes and lanterns—a sport too well known in Kentucky to need description. The "coon hunt" is usually carried on for the fun and excitement of the sport and to protect the chicken-yard and corn-field rather than for the flesh or the pelt as is often supposed, for, although often eaten, the meat is nothing remarkable and is likely to contain parasites, and the skin, although it has a market value, has a rather poor fur which is not very durable.

The raccoon is no coward and when cornered will put up a stiff fight as many a young and inexperienced dog has learned to its sorrow.

Raccoons usually make their homes in hollow trees. They are omnivorous in their diet, feeding on mice, frogs, young birds, eggs, crawfish, mussels, insects, nuts, fruits and grains, and even fish which they sometimes catch by clever methods. They have the curious habit of washing their food with water when opportunity offers; if no water is at hand, the animal goes through the motions just the same, rubbing the food carefully between its paws as though to clean it. They use their front feet as hands in a very monkey-like fashion.

Raccoons are very intelligent and are readily tamed. Young specimens are extremely playful and will perform most amusing antics when kept as pets. Their especial characteristic is curiosity which is well illustrated by their habit of exploring every hole, crevice, drawer or pocket they can find, and they get to be rather tiresome pets on account of their cunning, and their mischief-loving disposition.

**35. *Ursus americanus* Pallas.—Black Bear.**

*Description:* Length 5—6 ft. Body robust; tail rudimentary; snout blunt and depressed; feet plantigrade; soles not fully furred; teeth, 42; molars, two above and three below. Color variable, from uniform black to cinnamon or brown.

*Distribution:* Eastern Mountains and Knobs; rare.

*Records:* Pine Ridge near Campton, 1921 (E. Spencer and S.

Cable); Pikeville, female and two cubs, Feb. 19, 1922 (W. Halloway); Torrent, old den (V. K. Dodge); Wolfe Co. (W. R. Sebastian).

*Remarks:*

The bear has been practically exterminated in Kentucky and is now found only in the wildest regions. It will doubtless soon be extinct in this State.

Bears are timid creatures in spite of their size and strength, and contrary to the usual notion will always avoid man if possible. If cornered, however, or when defending their cubs they are desperate fighters.

They are omnivorous, but prefer berries, small fruits, roots, honey, insects, fish and small rodents. They are very fond of sweets. Some individuals develop a liking for meat and destroy sheep and pigs when opportunity offers.

In captivity they are easily tamed and soon become friendly and companionable. Young specimens are very playful; frolicking and romping like children. They apparently have a real sense of humor and the literature is full of accounts of their pranks both in captivity and in the wild state.

This species is often called the "brown bear" and the "cinnamon bear" on account of the color variation in individuals.

**36. *Lutra canadensis lataxina* Cuvier.—Otter.**

*Description:* Length 45 in.; tail 15 in. Aquatic; cerebral portion of skull swollen backwards and outwards; eyes and ears small; snout short; feet adapted for swimming; toes webbed. Color uniform light brown, paler on the throat.

*Distribution:* Purchase Region.

*Records:* Ballard Co. 1921 (E. A. Whalin).

*Remarks:*

The otter is truly aquatic and is extremely seal-like in appearance. In fact, this animal probably now represents the transition stage in evolution through which the seals passed in changing from a terrestrial to an aquatic life.

Although otters spend a considerable portion of their time on land, they are very clumsy out of their natural element, their



long heavy bodies being too unwieldy for their short legs. In the water they are swift and graceful. They can outswim a fish and are beautiful divers. Their dens are built in the sides of a bank, usually with the entrance below water. The parents and young generally stay together for the first season and are excellent illustrations of happy families for they are devoted to each other, are very playful, and are noted for their "slides"—slippery paths down steep muddy banks—down which they slide with apparently all the enjoyment of a small boy with his sled.

Otters feed almost entirely on fish and water birds. They are ferocious fighters and it is a foolish dog indeed that tries to dig one out of its den.

The skin is very valuable since the fur is dense, glossy and durable. On this account the animals are rapidly being exterminated in all parts of the country and are getting very scarce in Kentucky.

### 37. *Mephitis mephitis* Shaw.—Skunk; "Pole-Cat".

*Description:* Length 2 ft.; tail 8½ in. 34 teeth, one molar on each side above and two below; plantigrade with five toes on each foot; cerebral portion of skull compressed behind; snout long; ears low; eyes brown; color variable, generally black with a white frontal stripe, two white stripes down back, and tip of tail white; tail tapering; legs short; feet small; body heavily built. Weight about eight pounds.

*Distribution:* Common throughout the State.

*Records:* By counties—Anderson (W. D. F.); Ballard (E. A. Whalin); Barren (J. O. Horning); Bath (C. F. Martin); Bell (R. H. Shipp); Boone (Maurer Bros.); Bracken (P. J. Arnold); Breathitt (G. W. Thompson); Bullitt (J. H. Sanders); Butler (F. H. Spickard); Calhoun (J. B. Gardner); Campbell (A. B. Regenstein, H. F. Link); Carroll (M. L. Downes); Casey (J. Wells); Clay (L. A. Clark); Clinton (W. M. Watkins); Crittenden (J. R. Spencer); Cumberland (C. S. Payne); Edmonson (W. G. Bullinger); Elliott (H. H. Mayse); Fayette (W. D. F.); Fleming (H. F. McKenney); Gallatin (O. Rea); Graves (B. H. Mitchell); Grayson (J. S. Hughes); Green (J. A. Howard); Harlan (C. Powell);

Hart, abundant (J. S. Pullen); Henderson (A. Cohen); Henry, abundant (L. S. Rhoades); Hickman (L. Jackson); Hopkins (M. M. Gordon); Jackson (J. Jones); Kenton (C. A. Wicklund); Knott (A. Campbell); Knox (E. Mayhew); Larnie, abundant (J. N. Jones); Laurel (F. B. Wilson); Lawrence (G. C. Baker); Leslie (M. O. Fairchild); Lewis (R. O. Bate); Lincoln (B. C. Elston); Livingston (J. Scales); Logan (W. R. Whitlow); McLean (R. H. Ford); Marion (H. J. Childress); Marshall (G. O. Basham); Martin (E. Cassady); Morgan (R. B. Rankin); Muhlenberg (F. O. Townes); Nelson (C. L. Hill); Ohio (R. Myers); Oldham (G. B. Nanee); Owen (D. P. Morris); Owsley (P. M. Frye); Pike (W. M. Wesley); Powell (J. Randall); Pulaski (W. Keyes); Taylor (J. L. Miller); Union (A. M. Allen); Washington, plentiful (R. M. Heath); Wolfe (W. R. Sebsation); Woodford (W. D. F.).

#### *Remarks:*

Generally nocturnal. Sluggish in habits. They live in holes and caves, often appropriating the burrows of other animals, where they bring forth their young in litters of six or eight. They feed almost entirely on insects, grubs, worms, eggs and mice.

The skunk is best known of course on account of its ability to discharge a malodorous fluid which, to every country boy at least, is too well known to need description, if indeed we had adjectives in our vocabulary of sufficient strength (we use the word advisedly) to write such a description. Professor Herrick says:

"This well known animal may be described as the incense-bearer of the sylvan deities and yet the odor of sanctity which clings to the sable and ermine of its vestures suggest that those deities belong in the theogony of Pluto".\*

In discharging the fluid, which it can eject for a distance of about fifteen feet, it is necessary for the skunk to lift its tail; if carried by the tail, or if the tail is held down, the animal is unable to defend itself in its characteristic fashion. We do not advise amateurs, however, to practice handling specimens

\*Herrick, C. L. *Mammals of Minnesota*, 1892, p. 94

unless they are very careful in their "approach" and their "get-away."

The modern generation of young men in their high-powered cars will not appreciate the experiences which many of the older generation have undergone, in which a horse and buggy, a farmer boy and his best girl, a country road on a Sunday night, and a skunk which refused to yield the right-of-way, were characters and scenes in a soul-stirring and never to be forgotten drama.

Skunks have a good deal of confidence in their peculiar method of protecting themselves and are not all timid. This sometimes leads to their destruction, especially when they refuse to get out of the way of a locomotive—an example of mistaken instinct. They are quite intelligent however and can be readily tamed. The scent glands, without which a skunk would be no skunk at all, are located in masses of muscle on each side of the rectum and may be removed by a rather simple operation, after which the animal is harmless. When the glands are removed, or when the animal is young, it makes an excellent pet, being attractive in appearance, friendly in disposition, playful, rather affectionate, and above all very cleanly in habits.

Skunks are really very valuable animals. They do no harm to crops and they do an immense amount of good in destroying insects, larvae and rodents. They do some damage by destroying the eggs and young of ground birds and on rare occasions make raids on poultry and their eggs, but this is a small item in their diet. In addition, the pelts are quite valuable. The fur, particularly of those specimens which have only a small amount of white—and the amount of white differs greatly in individuals—is sold under the trade name of "Alaska Sable" and brings a high price. It is of good quality, is beautiful and durable, and is well worth the trouble of breeding the animals, as is indicated by the various "skunk farms" which have been successful.

The skunk was an animal of peculiar interest to the early travelers in America and is described by Carver (Travels, p. 421) as follows:

"This is the most extraordinary animal that the Ameri-

can woods produce. Its extraordinary powers are only shown when it is pursued. As soon as he finds himself in danger he ejects to a great distance a small stream of water of so subtle a nature, and at the same time so powerful a smell, that the air is tainted with it for half a mile in circumference. On this account he is called by the French, *Enfant du Diable*, the Child of the Devil, or *Bete Puante*, the Stinking Beast."

### 38. *Putorius vison* Schreb.—Mink.

*Description:* Length 22 in.; tail 8 in. Digitigrade; 34 teeth; head broad; ears short; tail bushy; color very dark brown



FIG. 37. Photo by W. E. Jallson  
THE HOME OF THE MINK  
A scene in Grayson County

with white markings on under surface; body long; legs short.

*Distribution:* Fairly common throughout the State.

*Records:* By counties—Ballard, abundant (E. A. Whalin); Barren (J. O. Horning); Bath (C. F. Martin); Bell (R. H. Shipp); Boone (R. Smith); Bracken (P. J. Arnold); Breathitt (G. W. Thompson); Bullitt (J. H. Sanders); Butler (E. N. McKenney); Calloway (J. B. Gardner);

Campbell (A. B. Regenstein, H. F. Link); Carlisle (R. Holt); Carroll (M. L. Downes); Casey (J. Wells); Clay (H. L. Morgan); Clinton (W. M. Watkins); Crittenden (J. R. Spencer); Cumberland (C. S. Payne); Edmonson (W. G. Bullinger); Elliott (H. H. Mayse); Fayette (L. Moore); Fleming (H. F. McKenney); Fulton (B. Williams); Gallatin (O. Rea); Graves (B. H. Mitchell); Green (J. A. Howard); Harlan (C. Powell); Hart, abundant (J. S. Pullen); Henderson (A. Cohen); Henry (L. S. Rhoades); Hickman (L. Jackson); Jackson (W. R. Reynolds); Kenton (C. A. Wicklund); Knott (A. Campbell); Knox (E. Mayhew); Larue (J. N. Jones); Laurel (F. B. Wilson); Lawrence (G. C. Baker); Leslie (M. O. Fairchild); Lewis, 15 killed recently (R. O. Bate); Lincoln (C. B. Elston); Livingston (B. Hall); McCracken (J. R. Bird); McLean (R. H. Ford); Marion (H. J. Childress); Marshall (G. O. Basham); Martin (E. Cassady); Morgan (R. B. Rankin); Muhlenberg (F. O. Townes); Nelson (C. L. Hill); Ohio (L. Nelson); Oldham (G. B. Nance); Owen (D. P. Morris); Owsley (P. M. Frye); Pike (W. M. Wesley); Powell (R. Estep); Pulaski (R. Meece); Taylor (J. L. Miller); Union (A. M. Allen); Washington (R. M. Heath); Webster (L. E. Cutler); Wolfe (W. R. Sebastian).

**Remarks:**

A most versatile animal. While primarily an aquatic carnivore, swimming and diving in a most expert fashion, it is incredibly swift on land and can out-run, out-dodge, and out-fight almost any animal of its size. It is an adept at hiding, can secrete itself in a crevice which would hardly conceal a rat or disappear in a brush-heap or into the sedges in a manner most mystifying. It climbs well and often preys on birds and their eggs. At any time of day or night, any season of the year, in any kind of weather, the mink is ready for business, and its resources are boundless. No small mammal, bird, fish or frog is safe when it starts out hunting. Minks usually hunt near water, but when the water is frozen they seem to be equally successful in securing food in the snow, and if the streams dry up they are perfectly at home in the forest.

The fur of the mink is very valuable and the animals are now being bred in captivity for the sake of their skins. They seem to do well in these minkeries and produce from three to ten young a year in a single litter. The females reproduce when

one year old and the duration of gestation is so definite and unvarying that they may be cared for easily. There is no reason why the breeding of minks in Kentucky should not prove a profitable industry.

**39. *Putorius noveboracensis* Emm.—Weasel.**

**Description:** Length 15 in.; tail 6 in. Body slender; neck long; ears large; tail long and thin; toes cleft; pads on feet separate; color dark brown above, white below; end of tail black.

**Distribution:** Throughout the State; individuals not abundant.

**Records:** By counties—Ballard (E. B. Howell); Barren (J. O. Horning); Bath, abundant (C. F. Martin); Bell (R. H. Shipp); Boone (J. Stephens); Bracken (P. J. Arnold); Breathitt (G. W. Thompson); Butler (E. N. McKenney); Calloway (J. B. Gardner); Campbell (A. B. Regenstein, H. F. Link); Carlisle (B. A. Hensley); Carroll (M. L. Downes); Casey (J. Wells); Clay (L. A. Clark); Clinton (W. M. Watkins); Crittenden (J. R. Spencer); Cumberland (C. S. Payne); Daviess (H. S. Berry, R. Martin); Edmonson (W. G. Bullinger); Elliott (H. H. Mayse); Fleming (H. F. McKenney); Gallatin (F. Irwin); Graves (B. H. Mitchell); Grayson (J. S. Hughes); Green (J. A. Howard); Hart (R. L. Boyd); Henderson (A. Cohen); Henry (L. S. Rhoades); Hickman (L. Jackson); Hopkins (M. M. Gordon); Jackson (W. R. Reynolds); Kenton (C. A. Wicklund); Knott (A. Campbell); Knox (E. Mayhew); Laurel (F. B. Wilson); Lawrence (G. C. Baker); Leslie (M. O. Fairchild); Lewis (R. O. Bate); Lincoln (C. B. Elston); Livingston (A. Mitchell); Logan (W. R. Whitlow); McCracken (J. R. Bird); McLean (R. H. Ford); Marion (H. J. Childress); Marshall (G. O. Basham); Martin (E. Cassady); Morgan (R. B. Rankin); Muhlenberg (F. O. Townes); Nelson (C. L. Hill); Oldham (G. B. Nance); Owen (D. P. Morris); Owsley (P. M. Frye); Pike (W. M. Wesley); Powell (W. Howell); Pulaski (L. Miller); Taylor (J. L. Miller); Union (A. M. Allen); Washington (R. M. Heath); Webster (L. E. Cutler); Wolfe (W. R. Sebastian).

**Remarks:**

Weasels are wicked, blood-thirsty, cruel little creatures, often killing apparently for the pure joy of slaughter, and in many cases merely sucking the blood and eating the brains of



their victims when they are not hungry enough to care for the meat. They feed chiefly on birds, chipmunks, rats, mice, rabbits and insects. They are tireless hunters, following their prey by scent as well as by sight.

They are very active, extremely powerful for their size, and able because of their slender bodies to enter small crevices to escape enemies or follow prey.

In the north weasels turn white in the winter but we have never seen the "ermine" pelage in Kentucky.

#### 40. *Vulpes fulvus* Des.—Red Fox.

*Description:* Length 40 in.; digitigrade; pupil elliptical; muzzle long; upper incisors not lobed; tail long and bushy, with soft fur and long hair. Color variable but usually rusty red, grayish on rump and flanks; tip of tail whitish; legs black; throat white; ears largely tipped with black.

*Distribution:* Very common throughout the State.

*Records:* By counties—Ballard (E. A. Whalin); Barren (J. O. Horning); Bath (S. Myers); Bell (R. H. Shipp); Boone (M. Williamson); Bracken (P. J. Arnold); Breathitt (G. W. Thompson); Bullitt (J. H. Sanders); Butler (T. T. Moore); Calloway (J. O. Jennings); Campbell (R. Gosney); Carlisle (B. A. Hensley); Carroll (M. L. Downes); Casey (T. Coulter); Clay (H. L. Morgan); Clinton (W. M. Watkins); Crittenden (J. R. Spencer); Daviess (F. Burns); Edmonson (W. G. Bullinger); Elliott (H. H. Mayse); Fayette (W. D. F.); Fleming (H. F. McKenney); Gallatin (F. Irwin); Graves (B. H. Mitchell, T. B. Withers); Grayson (J. Dinwiddie); Green (J. A. Howard); Harlan (M. Fee); Hart (R. L. Boyd); Henderson (A. Cohen); Henry (K. Bickers); Hopkins (M. M. Gordon); Jackson (R. Turner); Jessamine (J. J. Hooper); Kenton (A. Petty); Knott (A. Campbell); Knox (E. Mayhew); Larue, abundant (M. Walters); Laurel (F. B. Wilson); Lawrence (G. C. Baker); Leslie (M. O. Fairchild); Lewis (R. O. Bate); Lincoln (C. B. Elston); Livingston (E. Hedgepath); Logan (W. R. Whitflow); McCracken, scarce (J. R. Bird); McLean (R. H. Ford); Marion (H. J. Childress); Marshall (G. O. Basham); Martin (E. Cassady); Morgan (R. B. Rankin); Nelson (R. Bauers); Ohio (F. Robinson); Oldham (G. B. Nance); Owen (D. P. Morris); Owsley (P. M. Frye); Pike (W. M. Wesley); Pulaski (E.

Lovens); Taylor (J. L. Miller); Union (A. M. Allen); Washington (R. M. Heath); Webster (L. E. Cutler); Wolfe (W. R. Sebastian); Woodford (W. D. F.).

#### *Remarks:*

The reputation for intelligence and cunning which is usually credited to "Sir Reynard" is not merely a tradition but is well deserved and is abundantly illustrated by cases to which any fox-hunter can testify. The red fox is the cleverer of our two foxes and is probably the shrewdest of all of our Kentucky wild mammals. Moreover, its ability to profit by experience, to devise ways of securing food and to plan stratagems for escaping, seems to increase with its association with man. Fox hunting has always been and is still a favorite sport in Kentucky and is carried out according to traditions which reflect genuine sportsmanship and no aspect of cruelty. When pursued by the hounds, red foxes seldom take to earth except in the case of young cubs, and display wiles which have been recorded in many tales on this subject.

Red foxes stay much in the open. They do most of their hunting in the early morning and late afternoon but are likely to be seen at any time of day. Their sense of hearing is very acute and they depend on their ears almost as much as on their nose to locate their prey or their enemies.

Their food consists chiefly of insects, mice, rats, squirrels, chipmunks, rabbits, woodchucks and all kinds of birds. They are very destructive to poultry and sheep and will kill even young pigs.

A color variety of the red fox, known as the "black fox" or "silver fox", so called because of its black color and silver-tipped tail, and highly prized for its fur, has never, so far as we can learn, been reported from Kentucky.

#### 41. *Urocyon cinereoargenteus* Muller.—Gray Fox.

*Description:* Length 40 in.; tail 14 in. General color grayish; fur really quite dark but with hairs tipped with lighter which gives a gray appearance; tip of tail usually darker than rest of body and has a concealed mane of stiff hairs; chin and a spot on the nose usually black; base of ears, inside of front legs, and a band on the belly reddish.

Smaller than the red fox, and more dog-like in appearance.

**Distribution:** Still quite abundant in most parts of Kentucky. In some parts of the State it has apparently increased in numbers in the past few years. It is probably commoner in most regions than is generally supposed, due to its secretive habits and its dog-like actions and appearance, which doubtless serve to aid it in escaping notice.

**Records:** By counties—Adair, Columbia, Feb. 27, 1922 (S. Strange); Barren (J. O. Horning); Bath (J. Warner); Bell (R. H. Shipp); Boone (W. D. Sutton); Bracken (P. J. Arnold); Breathitt (G. W. Thompson); Bullitt (J. H. Sanders); Butler, abundant (F. H. Spickard); Calloway (J. O. Jennings); Campbell (R. Gosney); Carlisle (B. A. Hensley); Carroll (M. L. Downes); Casey (T. Coulter); Clay (H. L. Morgan); Clinton (W. M. Watkins); Crittenden (J. R. Spencer); Daviess (F. Burns); Edmonson (W. G. Bullinger); Elliott (H. H. Mayse); Fleming (H. F. McKenney); Gallatin (F. Irwin); Graves (W. Diedrich, T. B. Withers); Green (D. Gupton); Harlan (J. Burgan, S. Powell); Hart, abundant (R. L. Boyd); Henderson (A. Cohen); Henry (K. Bickers); Hickman (L. Jackson); Hopkins (M. M. Gordon); Jackson (R. Amyx); Knott (A. Campbell); Knox (E. Mayhew); Larue (M. Walters); Laurel (F. B. Wilson); Lawrence (G. C. Baker); Leslie (P. Napier); Lewis, abundant (R. O. Bate); Lincoln (C. B. Elston); Livingston (E. Hedgepath); Logan (W. R. Whitlow); McCracken, few (J. R. Bird); McLean (R. H. Ford); Marion (H. J. Childress); Martin (E. Cassady); Mercer (C. Currens); Morgan (R. B. Rankin); Nelson (R. Barnes); Ohio (F. Robinson); Oldham (G. B. Nance); Owen (D. P. Morris); Owsley (P. M. Frye); Pike (W. M. Wesley); Powell (J. Kirk); Pulaski (B. Meece); Taylor (J. L. Miller); Union (A. M. Allen); Washington (T. Comstock); Webster (L. E. Cutler); Wolfe (W. R. Sebastian).

**Remarks:**

The gray fox seems to prefer timber to open country and often lives in hollow stumps or logs instead of digging burrows. It is a good climber and can attain a considerable height in a

tree.\* Fox hunters do not credit it with as much intelligence or cunning as the red fox and reports from other parts of the United States would indicate that it is becoming scarcer than its red relative, a condition generally supposed to be due to a lack of adaptability.\*\* In Kentucky, however, it seems to be holding its own. Mr. J. S. Pullen of Mumfordsville, assures the writer that it is more abundant in Hart County than the red fox and has become more numerous in recent years; he estimates that there are one-fourth as many red foxes as gray in that county.

The pelt of the gray fox is not as valuable as that of the red, being stiffer and coarser.

Foxes are undoubtedly very destructive to poultry and to sheep, and the gray fox is no exception, but never the less these animals do considerable good in devouring rodents and many kinds of insects, especially grasshoppers.

**42. *Lynx rufus* Guld.—Wild Cat.**

**Description:** Length 3 ft.; tail 7 in. Body stout; tail short; feet large; claws retractile into a sheath; head broad; snout blunt; ears triangular and tufted; two premolars on each side above and below. Color reddish-gray; inside of legs with black cross-bands; tail with half-rings of black and a black tip.

**Distribution:** Chiefly in eastern mountains; becoming rare.

**Records:** By counties—Adair (G. Lawless); Bell (R. H. Shipp); Ballard (B. Hicks); Bath (C. F. Martin); Breathitt (G. W. Thompson); Calloway (J. Morgan);

\*An interesting illustration of the tree-climbing ability of the gray fox is given in the Lexington Leader of April 24, 1922, under the caption "Fox climbed four trees, escaped pack each time, finally entering a cave." The item, which is from Harrodsburg, states:

"To escape a pack of nineteen hounds which pursued, a mammoth gray fox climbed four trees in the Bellows Mill section and, after a race of two hours, escaped in a cave on Dr. Menaugh's farm. In each instance, Clark Currens, one of the company of eight hunters, climbed the tree, and every time he threw the fox in the midst of the dogs beneath. With the pack all over him, the powerful fox succeeded in wriggling out, and did not appear even scratched when Currens pulled him from the limb the fourth time. Veteran witnesses agreed that he was the largest fox they had ever seen, being almost a foot and a half tall and five feet from tip to tip. Its back was white, legs red and feet black."

\*\*In the Breck Smith Cave, about eight miles west of Lexington, has been found the skull of a specimen of Scott's Gray Fox (*U. cinereo-ergatus* Scott & Mearns) which, according to Dr. Hays as reported in the Proc. Biol. Soc. Wash. Mar. 20, 1922, would indicate that in early times the climate of central Kentucky was much warmer than it is now.

Campbell (R. Gosney); Casey (P. J. Stroud); Clay (L. A. Clark); Clinton (W. M. Watkins); Crittenden (J. R. Spencer); Elliott (H. H. Mayse); Fleming (H. F. McKenney); Graves (T. B. Withers); Grayson (A. V. McGill); Harlan, Nov. 27, 1921 (C. N. Nolan); Hart (P. Hawkins); Henderson (A. Cohen); Hickman (L. Jackson); Knott (A. Campbell); Laurel (F. B. Willson); Lawrence (G. C. Baker); Leslie (M. Sizemore); Marion (H. J. Childress); Martin (E. Cassady); Owsley (P. M. Frye); Pike (W. M. Wesley); Pulaski (C. Brinsen); Taylor (J. L. Miller); Wolfe (W. R. Sebastian).

*Remarks:*

Like the bears, the wild cats are making their last stand in the more rugged parts of the State and are doubtless doomed

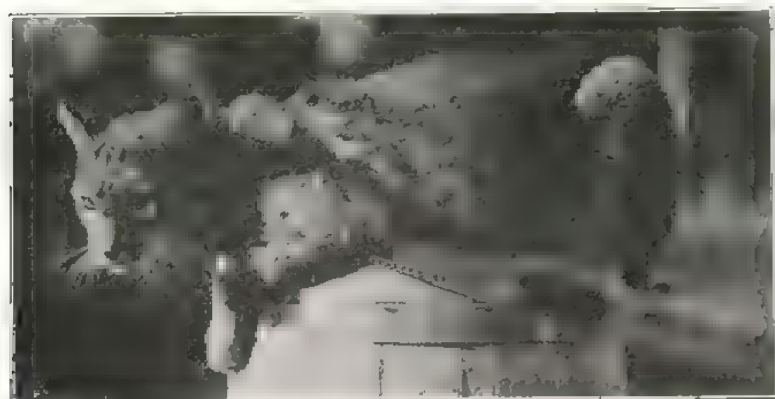


Fig. 88

INTERESTED IN THE GAME

A wildcat watching a football contest at the University of Kentucky

to extinction. They are seldom found outside of heavy timber where they lead typical cat-like lives, largely nocturnal, stealthy in habits, and seldom seen. They are entirely carnivorous and feed on almost any animal which they can capture and kill. They are very cautious about showing themselves and studiously avoid man but will put up a desperate fight when captured. Apparently they never become reconciled to life in captivity and will not be entirely tamed. The athletic teams at the University of Kentucky, popularly nicknamed the "Wildcats", have had one of these animals for a mascot for several years.

This cat is always brought to the football games in a cage or is paraded before the crowds by a chain and has probably seen more human beings than any other wildcat in Kentucky but it still maintains a savage dignity which effectively prevents any familiarities on the part of the students.

The record for the largest wildcat killed in Kentucky is held, so far as our records show, by Chad N. Nolan of Harlan who killed a specimen on Pine Mountain in November, 1921, which weighed 43 pounds and measured 48 inches in length.



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"THE OLDEN DAYS"

# INDEX

	A	Page
Acadian Flycatcher .....		233
Accipiter cooperi .....		203
Accipiter velox .....		203
Actitis macularia .....		186
Adair County .....		115
Adelonycteris fuscus .....		336
Adelonycteris serotinus .....		336
Aegialitis semipalmata .....		187
Agelaius phoeniceus .....		138
Agkistrodon mokasen .....		132
Agkistrodon piscivorus .....	91,	131
Aix sponsa .....		165
Alaudidae .....		234
Allen, A. M. .... 64, 68, 112, 134,		162
Alligators .....		61
Aluce pratineola .....		211
American Bittern .....		173
American Crossbill .....		245
American Merganser .....		160
American Pipit .....		289
American Scaup Duck .....		167
American Scoter .....		169
Ammodramus savannarum australis .....		248
Amyda nuchalis .....		72
Amyda mutica .....		71
Anas platyrhynchos .....		161
Anas rubripes .....		162
Anderson County .....		18
Anderson, W. A. .... 159,		164
Anhinga, anhinga .....		158
Animal Groups .....		54
Anser albifrons gambeli .....		179
Anseres .....		160
Anthus rubescens .....		289
Antrostomus carolinensis .....		224
Antrostomus vociferans .....		225
Aphelocoma cyanea .....		235
Aquila chrysaetos .....		207
Archilochus colubris .....		228
Aretomys monax .....		320
Ardea herodias .....		174
Arnold, P. J. .... 63, 68, 111, 133,		161
Asio flammeus .....		212
Astrogalinus tristis .....		246
Astur atricapillus .....		205
Atalapha noveboracensis .....		336
Audubon, J. J. .... 44, 155, 167, 172, 181, 184, 193, 209, 216, 219,		266
B		
Bachman's Sparrow .....		254
Bachman's Warbler .....		272
Baeolophus bicolor .....		297
Baker, G. C. .... 68, 112, 134,		165
Bald Eagle .....		208
Baldpate .....		162
Ball, E. D. .... 98		
Ballard County .....		9, 20
Baltimore Oriole .....		241, 242

	Page
Banded Water Snake	169
Bank Swallow	263
Barred Owl	212
Barrens	6, 17, 35, 52
Bartlett, A. D.	86
Bartramia longicauda	186
Basham, G. O.	162
Bate, R. O.	64, 68, 112, 134, 162, 165
Bats	334, 335, 336, 337, 338
Bay-breasted Warbler	279
Beadsnake	130
Bear	40, 45, 340
Bear Grass	3, 54
Beaver	42
Beckham, C. W.	154, 164, 175, 179
Bee Martin	229
Beil County	79
Belted Kingfisher	218
Berry, H. S.	68, 133
Bewick's Wren	292
Bibb, G. R.	74
Big Blackhead	167
Big Bone Lick	31, 216
Big Eared Bat	337
Big Sandy	11
Bird, J. R.	64, 68, 112, 134, 162
Bird Enemies	147
Bird Houses	150
Bird Regions	143
Bird Sanctuaries	150
Bison bison	34
Bittern	173
Black Bear	340
Black-crowned Night Heron	177
Blackbirds	237
Black and White Cresper	271
Black and White Warbler	277
Black-billed Cuckoo	218
Blackburnian Warbler	279
Black-capped Yellow Warbler	287
Black Duck	162
Black-headed Goldfinch	246
Blacknecked Stilt	182
Blackpoll'd Warbler	279
Black Skink	79
Blacksnake	100, 111, 115, 116
Black Tern	158
Black-throated Blue Warbler	276
Black-throated Bunting	260
Black-throated Green Warbler	281
Black-throated Loon	155
Black Vulture	202
Blarina brevicauda carolinensis	330
Blarina parva	331
Blatchley, W. S.	46
Blinco, B. J.	155, 156, 161, 162, 165, 173, 179, 216
Bluebird	305
Blue Grass	4, 12, 16

	Page
Blue Grass Park	107
Blue-gray Gnatcatcher	300
Blue Grosbeak	259
Blue-headed Vireo	269
Bluebill	167
Blue Jay	235
Blue Licks	31, 35, 36
Blue-tailed Lizard	78
Blue-winged Teal	163
Blue-winged Warbler	273
Bobolink	237
Bob White	189
Bodies of Water	18
Bohemian Waxwing	265
Bombycilla cedrorum	265
Bombycilla garrula	265
Bombycillidae	265
Bonaparte's Gull	157
Bonasa umbellus	190
Boone, Daniel	34
Boone County	31
Boone's Creek	107
Botaurus centigenosus	173
Bowling Green	159, 174
Box Turtle	68
Boyd, R. E. L.	97, 134
Brachiopods	27
Branta canadensis	170
Breck Smith Cave	23, 30, 37
Brimley, C. S.	114
Broadwinged Hawk	207
Broadhead, Mrs. L.	163, 164, 167, 180, 182
Bronzed Grackle	243
Brouse, H.	115
Brown Bear	341
Brown Creeper	295
Brown Shrew	331
Brown Snake	110
Brown Swift	73
Brown Thrasher	282
Bryozoa	27
Bubo virginianus	214
Buffalo	34, 36
Bullbat	226
Bull Snake	119
Bullinger, W. G.	64, 68, 111, 133, 161
Burton, F.	112
Butcher Bird	238
Buteo borealis	205
Buteo lineatus	206
Buteo platypterus	207
Butorides virescens	176
Butterball	168
Buzzard	201

## C

Calenarius lapponicus	247
Campbell, A.	64, 68, 112, 134



	Page
<i>Campephilus principalis</i> ..	249
Canada Goose ..	170
Canadian Warbler ..	288
<i>Canis lupus</i> ..	42
<i>Canis nubilus</i> ..	41
Canvasback ..	163
Cape May Warbler ..	275
Carapace ..	62
Carboniferous ..	29, 73
Cardinal ..	258
Cardinal Grosbeak ..	258
<i>Cardinalis cardinalis</i> ..	258
Carnivora ..	339
Carolina Bat ..	337
Carolina Chickadee ..	298
Carolina Paroquet ..	216
Carolina Wren ..	292
Carpenter, D. ..	165
<i>Carphophis amoena</i> ..	125
<i>Carphophis amoena helenae</i> ..	126
<i>Carpodacus purpureus</i> ..	241
Carrión Crow ..	202
Cassady, E. ..	68, 112, 134
Castor fiber ..	42
Catbird ..	290
Catharista uruba ..	202
<i>Cathartes aura septentrionalis</i> ..	201
<i>Catrophorus semipalmatus</i> ..	195
Cats ..	148
Cavernous Limestone Area ..	5, 17
Caves ..	6, 21, 22, 23, 24, 30, 37, 40, 56
Cedar Waxwing ..	265
<i>Centurus carolinus</i> ..	223
<i>Certhia familiaris americana</i> ..	295
Certhiidae ..	294
Cerulean Warbler ..	278
<i>Cervus canadensis</i> ..	37
<i>Ceryle alcyon</i> ..	218
<i>Chaetura pelagica</i> ..	227
Chain Snake ..	124
Chamberlain, C. ..	129
Chameleons ..	61
Characters of Mammals ..	309
<i>Charadrius dominicus</i> ..	186
<i>Chariotenetta albiola</i> ..	168
<i>Chaneleasmus streperus</i> ..	162
Checkered Snake ..	122
<i>Chelydra serpentina</i> ..	63
Chen hyperboreus ..	170
Chester Outcrop ..	5, 8
Chestnut-sided Warbler ..	278
Chewink ..	257
Chickadee ..	293
Chickaree ..	329
Chicken Hawk ..	203
Childress, H. J. ..	64, 68, 112, 134, 162
Chimney Swift ..	227
Chipmunk ..	322

	Page
Chipping Sparrow ..	252
Chiroptera ..	334
<i>Chondestes grammacus</i> ..	250
Chordata ..	57
<i>Chordeiles virginianus</i> ..	226
<i>Chrysemys marginata</i> ..	65
Chuck-Wills-Widow ..	224
Cinnamon Bear ..	341
<i>Circus hudsonius</i> ..	203
<i>Cistothorus stellaris</i> ..	294
<i>Clangula clangula americana</i> ..	168
Clapton, J. D. ..	131
Clark, L. A. ..	64, 68, 111, 133, 165
Cliff Swallow ..	263
Climate ..	9, 11, 12
<i>Cnemidophorus sexlineatus</i> ..	77
Coalings ..	49, 50
Coccyges ..	216
<i>Coccyzus americanus</i> ..	217
<i>Coccyzus erythrophthalmus</i> ..	218
<i>Colaptes auratus auratus</i> ..	223
<i>Colaptes auratus luteus</i> ..	224
<i>Colinus virginianus</i> ..	189
Colossal Cavern ..	21
<i>Coluber constrictor constrictor</i> ..	111
Columbae ..	193
Common Water Snake ..	107
<i>Comptosylpis americana americana</i> ..	275
<i>Comptosylpis americana usnea</i> ..	275
Conkle, H. ..	145
Connecticut Warbler ..	285
Conservation ..	49
<i>Coniaropsis carolinensis</i> ..	216
Coon ..	339
Cooper's Hawk ..	203
Coot ..	180
Cope, E. D. ..	80
Copperhead ..	54, 132
Coral ..	27
Coral Snake ..	130
Corbin ..	118, 119
Cormorant ..	159
Corrall, T. ..	64
Corvidae ..	234
<i>Corvus brachyrhynchos</i> ..	236
<i>Corvus corax sinuatus</i> ..	235
<i>Corynorhinus machrotis</i> ..	327
Cotton Mouse ..	319
Cotton-mouthed Moccasin ..	131
Cottontail ..	312
<i>Coturnicops noveboracensis</i> ..	179
Cougar ..	38
Cowbird ..	234
Cowsucker ..	122
Cox, W. T. ..	133
Cranes ..	178
Crayfish ..	23
Crested Flycatcher ..	230

	Page
Creepers .....	294
Crickets .....	23
Crinoids .....	27
Crocodilum .....	61
Crotalus adamanicus .....	139
Crotalus horridus .....	136
Crow .....	234, 236
Crystal Cave .....	6
Cuckoos .....	216, 217, 218
Cumberland Mountains .....	9
Cumberland River .....	50
Cumberland Terrapin .....	67
Cuming, John .....	36
Cunningham, O. L. ....	112, 161
Cutler, L. E. ....	64, 68, 112, 134
Cyanocitta .....	235

## D

Dabchick .....	154
Dafila acuta .....	164
Daugherty, L. S. ....	96
Davis, J. ....	128
Dean, M. ....	112
Dean, E. H. ....	161, 167, 209
Decrease of Birds .....	143
Deer .....	338
Deer Mouse .....	317
Demeese, J. M. ....	169
Dendroica aestiva .....	275
Dendroica caerulescens .....	276
Dendroica carbonata .....	276
Dendroica castanea .....	279
Dendroica cerulea .....	278
Dendroica coronata .....	277
Dendroica discolor .....	282
Dendroica dominica albilora .....	280
Dendroica dominica dominica .....	280
Dendroica fusca .....	279
Dendroica kirtlandi .....	281
Dendroica magnolia .....	277
Dendroica palmarum .....	282
Dendroica pennsylvanica .....	278
Dendroica striata .....	279
Dendroica tigrina .....	275
Dendroica vigorsii .....	281
Dendroica virens .....	281
Derby Flycatcher .....	230
Diadophis punctatus .....	121
Diamondback Rattlesnake .....	139
Dickcissel .....	260
Didelphis virginiana .....	310
Didlake, M. ....	155, 156, 162, 163, 173, 176, 180, 187
Diedapper .....	154
Dipper .....	108
Ditmars, R. L. ....	67, 77, 129
Diving Birds .....	154
Dix River .....	65, 69, 119
Dodge, V. K. ....	117, 162, 164, 165, 166, 187, 263

	Page
Dolichonyx oryzivorus ..	237
Double-crested Cormorant .....	159
Doves .....	193
Downy Woodpecker .....	221
Drainage .....	18, 19
Dryobates pubescens medianus .....	221
Dryobates pubescens pubescens .....	220
Dryobates villosus .....	219
Duckhawk .....	209
Ducks .....	160
Dumetella carolinensis .....	290

## E

Eastern Highlands .....	48
Ectopistes migratorius .....	193
Egret .....	175
Egretta candidissima .....	175
Elanoides forficatus ..	202
Elaphe obsoleta obsoleta ..	118
Elaphe vulpina .....	117
Elk .....	37
Elkhorn District .....	5
Elston, C. B. ....	64, 67, 112, 134
Empidonax flaviventris .....	232
Empidonax minimus .....	233
Empidonax viriscens .....	233
English Pheasant .....	192
English Sparrow .....	149, 210
Erismatura jamaicensis .....	169
Euphagus carolinus ....	243
Ereunetes pusillus .....	184
Evening Grosbeak .....	214

## F

Fairchild, M. O. ....	64
Falco columbarius .....	209
Falco peregrinus anatum .....	209
Falco sparverius .....	210
Faunal Areas .....	47, 48
Fayette County .....	16
Feather Areas .....	153
Feeding Stations .....	150
Felis concolor .....	38
Fence Lizard .....	73
Ferren, G. ....	68
Fiber zibethicus .....	313
Field Lark .....	239
Field Mouse .....	314
Field Sparrow .....	252
Finches .....	244
First Settlers .....	33
Fish .....	23, 28, 45, 58
Fishback, C. ....	112
Fish Hawk .....	210
Filson, John .....	35, 36
Five-lined Lizard .....	78
Fleashaters .....	339
Flicker .....	223

	Page
Florida caerulea .....	176
Florida Gallinule .....	180
Florida Jay .....	235
Floyd County .....	24
Flycatchers .....	229
Flying Squirrel .....	327
Fly-up-the-creek .....	176
Forbush, E. H. ....	148
Fork-tailed Flycatcher .....	229
Ford, R. H. ....	64, 68, 112, 134, 162
Foxes .....	348, 349, 350
Fox Snake .....	117
Fox Sparrow .....	257
Fox Squirrel .....	326
Frankfort .....	50
Franklin County .....	11, 20
Fringillidae .....	244
Frye, P. M. ....	60, 112
Fulica americana .....	180

## G

Gallinae .....	188
Gallinago delicata .....	182
Gallinula galeata .....	180
Gardner, J. B. ....	63, 111
Garman, H. ....	40, 72, 112, 172, 181, 186, 320, 336
Gavia arctica .....	155
Gavia immer .....	155
Gadwall .....	162
Gartersnake .....	193
Gavials .....	61
Geese .....	160, 170
Geography .....	1
Glaucornis volans saturatus .....	330
Glaucornis volans volans .....	327
Geothlypis trichas .....	256
Gist, Christopher .....	31
Glacial Period .....	23, 30
Glass Snake .....	75
Gnatcatchers .....	309
Grasshoppers .....	312
Golden Mouse .....	319
Greater Scaup Duck .....	167
Greater Yellowlegs .....	184
Green Flycatcher .....	233
Green River .....	37, 193
Green Snake .....	120
Green-winged Teal .....	163
Grand Cave .....	21
Gray Fox .....	344
Gray Squirrel .....	323
Grebe .....	154
Grosbeak .....	259
Groundhog .....	320
Ground Lizard .....	83
Ground Snake .....	110
Ground Squirrel .....	322
Grouse .....	43, 190

	Page
Grus americana .....	178
Guiraca caerulea .....	259
Grus mexicana .....	178
Gulf of Mexico .....	8
Gull .....	156

## H

Hairy Woodpecker .....	210
Haliastur leucoccephalus .....	208
Harelda hyemalis .....	169
Harrier .....	203
Hart County .....	37
Harvest Mouse .....	216
Hawk .....	202, 203, 204, 205, 206, 207
Healy, D. J. ....	174
Heath, R. M. ....	64, 68, 112, 162
Hegner, R. W. ....	98
Helinaia swansoni .....	272
Helldiver .....	154
Helminthos vermivorus .....	272
Helodromus solitarius .....	185
Henderson .....	117, 170, 184, 219, 229
Hen Hawk .....	203
Hensley, B. A. ....	64, 68, 111, 133, 161, 165
Hensley, T. ....	63
Henslow's Sparrow .....	249
Hermit Thrush .....	303
Herrick, C. L. ....	40
Herring Gull .....	156
Herodias egretta .....	175
Heron .....	172
Hesperiphona vespertina .....	244
Heterodon contortrix .....	126, 127
Hickman .....	8, 51, 78
Highland Moccasin .....	132
H.D. C. L. ....	64, 68, 112, 134, 162
Humanopus mexicanus .....	182
Hines Cave .....	24
Hirundinidae .....	262
Hirundo erythrogaster .....	263
Hodge, C. L. ....	83
Hognosed Snake .....	126
Hooded Merganser .....	161
Hooded Warbler .....	257
Hoofed Mammals .....	334
Hoot Owl .....	212
Horned Lark .....	234
Horse Cave .....	21
House Snake .....	122
House Wren .....	283
Howard, J. R. ....	64, 68, 112, 134, 161
Hughes, J. S. ....	64, 68, 112, 134
Huggins, W. A. ....	171
Humidity .....	12
Hummingbird .....	224
Hurst, M. ....	160, 162
Hydrochelidon nigra surinamensis .....	178
Hyla chila aliciae aliciae .....	302



	Page
<i>Hylocichla fuscescens fuscescens</i> .....	302
<i>Hylocichla guttata pallasi</i> .....	303
<i>Hylocichla mustelina</i> .....	301
<i>Hylocichla ustulata swainsoni</i> .....	303
<i>Hypochilus thornellii</i> .....	46

## I

<i>Icteria virens</i> .....	286
Icteridae .....	237
<i>Icterus galbula</i> .....	241
<i>Icterus spurius</i> .....	241
Idlewild .....	109
Illinois Summer Finch .....	254
Indiana .....	182, 183, 272
Indigo Bunting .....	260
Insects .....	12
Insect Eaters .....	330
Insect Pests .....	145, 146
Insectivora .....	330
Introduced Mammals .....	307
<i>Ictornis martinicus</i> .....	180
<i>Iridoprocne bicolor</i> .....	264
Irwin, F. ....	64, 112, 161, 165
Ivorybilled Woodpecker .....	219
<i>Ixobrychus exilis</i> .....	174

## J

Jackson, L. ....	34, 68, 112, 134, 162, 165
Jackson Purchase .....	8
Jay .....	234, 235
Jay bird .....	235
Jillson, W. R. ....	6
Johnson, Frances .....	25
Joint-snake .....	76
Jones, H. ....	112
Jones, J. N. ....	64, 112, 134, 162
Jordan, D. S. ....	131
<i>Junco hyemalis</i> .....	253
Jumping Mouse .....	312

## K

Kenton, Simon .....	33
Kentucky Cardinal .....	258
Kentucky River .....	50, 79, 173, 213
Kentucky Warbler .....	284
Keown S. O. ....	162
Killdeer .....	187
Kingbird .....	279
Kingfisher .....	216
Kinglets .....	299
King Rail .....	175
King Snake .....	124
<i>Kinosternum odoratum</i> .....	65
Kirkpatrick, S. ....	165
Kirtland's Warbler .....	281
Knobs .....	3, 15, 33

## L

	Page
Lacertilia .....	72
Lake Ellerslie .....	167
<i>Lampropeltis getulus</i> .....	121
<i>Lampropeltis triangulum</i> .....	122
Land Life .....	29
Land of Ten Thousand Sinks .....	6
Laniidae .....	266
<i>Lanius borealis</i> .....	266
<i>Lanius ludovicianus</i> .....	266
<i>Lanius ludovicianus migrans</i> .....	266
<i>Lanivireo flavifrons</i> .....	268
<i>Lanivireo solitarius</i> .....	269
Leopold Longspur .....	217
Large Brown Bat .....	336
Larks .....	234
Lark Sparrow .....	204
<i>Larus argentatus</i> .....	156
<i>Larus delawarensis</i> .....	157
<i>Larus marinus</i> .....	156
<i>Larus philadelphia</i> .....	157
<i>Lasionotus noctivagus</i> .....	338
Least Bittern .....	174
Least Flycatcher .....	233
Least Sandpiper .....	183
Least Tern .....	158
Leather Turtle .....	71
Lemon, C. G. ....	112
Lincoln's Sparrow .....	256
<i>Lepus sylvaticus</i> .....	321
Lesser Scaup Duck .....	167
Lexington .....	5, 36, 109
Limestone .....	21, 27
Limicolae .....	181
Link, H. F. ....	63, 111, 133, 161
Little Blue Heron .....	176
Little Brown Bat .....	334
Little Green Heron .....	176
Lizards .....	61, 72, 73
Loennberg, E. ....	131
Loggerhead Shrike .....	266
Long-billed Marsh Wren .....	294
Long-eared Bat .....	336
Long-eared Owl .....	211
Longipennies .....	156
Long-winged Swimmers .....	156
Loon .....	155
<i>Lophodytes cucullatus</i> .....	161
Lost Rivers .....	6
Louisiana Water Thrush .....	284
Louisville .....	181, 196
Lower Austral Zone .....	8, 51
<i>Loxia curvirostra minor</i> .....	245
Lucas, C. ....	64, 111, 133
<i>Lutra canadensis latissima</i> .....	341
<i>Lygosoma lateralis</i> .....	80
<i>Lyta rufus</i> .....	371

M	Page
Macrochires .....	224
Madden Estate .....	55
Magnolia Warbler .....	277
Malacoclemmys geographicus .....	67
Mallard .....	161
Mammals .....	307
Mammoth .....	30, 32
Mammoth Cave .....	5, 56, 21
Map Turtle .....	67
Manica americana .....	166
Marila collaris .....	167
Marila matila .....	167
Marila valisneria .....	166
Marine Life .....	27
Marsh Hawk .....	203
Marsh Wrens .....	194
Marsupialia .....	310
Martin .....	262
Martin, C. F. .... 63, 68, 111, 133, 161	165
Martin, D. W. .... 64, 68, 112	112
Maryland Yellow-throat .....	186
Mastodon .....	30, 32
Mauldraugh's Hill .....	3
Mayhew, E. .... 64, 68, 112, 134, 162	162
Mayse, H. H. .... 64, 68, 111, 133	133
Maysville .....	35
Maysville .....	35
McGinnis, C. W. .... 121	121
McKay, E. E. .... 178, 216	216
McKenney, H. F. .... 64, 68, 112, 133, 161	161
McMeekin, R. W. .... 177, 178	178
Meadow Lark .....	239
Meadow Mouse .....	314
Meese, R. .... 134	134
Melanerpes erythrocephalus .....	272
Meleagris gallopavo silvestris .....	191
Melospiza lincolni .....	256
Melospiza melodia .....	255
Mephitis mephitis .....	342
Mergansers .....	160
Mergus americanus .....	160
Mergus serrator .....	160
Mice .... 312, 314, 315, 316, 317, 318, 319	319
Microtus austerus .....	316
Microtus pennsylvanicus .....	314
Microtus fulvus .....	133
Migrants .....	152
Migrant Shrike .....	266
Milk Snake .....	122
Mimidae .....	289
Mimus polyglottis .....	289
Mink .....	345
Miller, A. M. .... 14, 22, 29, 97, 156	156
Miller, J. L. .... 64, 68, 112, 134, 162	162
Mississippi River .....	9, 18, 45, 71
Mitchell, B. H. .... 64, 68, 112, 133, 161, 165	165
Mitchell, J. H. .... 78	78
Mniotilta vari. .... 271	271

	Page
Mniotiltidae .....	271
Mockingbird .....	289
Mole .... 332, 333	333
Mole Shrew .....	330
Molluscs .... 27, 45	45
Molothrus ater .....	238
Monkey-faced Owl .....	211
Moore, L. .... 110, 111	111
Moose .....	38
Morgan County .....	82
Morgan G. .... 112, 162	162
Morgan, M. .... 134	134
Morrell, C. K. .... 162, 168, 176, 185	185
Morris, D. P. .... 64, 68, 112, 134, 162, 165	165
Moser, W. B. .... 68, 161	161
Motacillidae .....	289
Mountains .... 1, 14, 48	48
Mourning Dove .....	200
Mourning Warbler .....	285
Mud Turtle .....	66
Munfordville .....	75
Muscivora tyrannus .....	229
Muskrat .....	313
Musk-turtle .....	65
Mus norvegicus .....	323
Myiateria americana .....	172
Myiarchus crinitus .....	230
Myrtle Warbler .....	277
Myrochanes virens .....	232

## N

Nance, G. B. .... 64, 68, 112, 134, 162	162
Nannus hiemalis .....	292
Nashville Warbler .....	273
Native Mammals .....	307
Natrix fasciata .....	84
Natrix sipedon erythrogaster .....	119
Natrix sipedon fasciata .....	144
Natrix sipedon sipedon .....	107
Neotoma pennsylvanica .....	329
Nettion carolinense .....	163
Newby, S. .... 112	112
Newman, H. E. .... 131	131
Night Hawk .....	226
Northern Flicker .....	224
Northern Parula Warbler .....	275
Northern Shrike .....	266
Northern White-footed Mouse .....	318
Nuthatches .....	296
Nuttallornis borealis .....	231
Nyctea nyctea .....	216
Nycticorax naevius .....	176

## O

Oakwoods Sparrow .....	254
Ochthodromus wilsonius .....	186
Odocoileus virginianus .....	333
Ohio River .... 1, 18, 30, 45, 71, 155, 185, 202, 216	216

	Page
<i>Oldemia americana</i> .....	169
Old Squaw .....	169
Olive-backed Thrush .....	303
Olive-sided Flycatcher .....	231
<i>Olor buccinator</i> .....	172
<i>Olor columbianus</i> .....	171
Onyx Cave .....	6, 21
<i>Ophedrys aestivus</i> .....	120
<i>Ophidia</i> .....	72, 80
<i>Ophisaurus ventralis</i> .....	75
<i>Oporornis formosus</i> .....	284
<i>Oporornis agilis</i> .....	285
<i>Oporornis philadelphia</i> .....	285
<i>Opossum</i> .....	310
Orange-crowned Warbler .....	274
Orchard Oriole .....	240
Orioles .....	237, 240, 241, 242
<i>Oryzomys palustris</i> .....	317
Osprey .....	210
<i>Otocoris alpestris alpestris</i> .....	234
<i>Otocoris alpestris graticola</i> .....	234
Otter .....	341
Otus asio .....	218
Ovenbird .....	283
Owensboro .....	75, 166
Owls .....	211, 212, 213, 214, 216
<i>Oxyechus vociferus</i> .....	187

## P

Painted Turtle .....	65
Palm Warbler .....	282
Paludicola .....	178
<i>Pandion haliaetus carolinensis</i> .....	210
Panther .....	38
Paridae .....	297
Paroquet .....	216
Parrot .....	216
Partridge .....	190
<i>Parula Warbler</i> .....	275
Passenger Pigeon .....	193
<i>Passerculus sandwichensis savanna</i> .....	248
<i>Passer domesticus</i> .....	245
Passeres .....	228
<i>Passerella iliaca</i> .....	257
<i>Passerherbulus caudatus</i> .....	249
<i>Passerherbulus henslowi</i> .....	249
<i>Passerina cyanea</i> .....	260
Payne, C. S. .....	111, 133
Peavler, L. .....	133
Pectoral Sandpiper .....	183
Pelican .....	159
<i>Pelicanus erythrorhynchus</i> .....	159
<i>Penthestes atricapillus</i> .....	298
<i>Penthestes carolinensis</i> .....	298
Peregrine Birds .....	228
Permanent Residents .....	152
<i>Peromyscus gossypinus megacephalus</i> .....	319

	Page
<i>Peromyscus leucopus</i> .....	317
<i>Peromyscus leucopus moreborensis</i> .....	318
<i>Peromyscus nuttalli</i> .....	319
<i>Peromyscus nuttalli aureolus</i> .....	319
Peter bird .....	297
<i>Petrochelidon lunifrons</i> .....	262
<i>Perisaea aestivalis</i> .....	254
<i>Perisaea aestivalis bachman</i> .....	254
Pewee .....	254
<i>Perisaea aestivalis illinoensis</i> .....	254
<i>Phalacrocorax auritus</i> .....	159
<i>Phalaropus falcarius</i> .....	281
<i>Phasianus colchicus</i> .....	192
<i>Phasianus torquatus</i> .....	192
Phelps' Cave .....	22, 40
Philadelphia Vireo .....	268
Philadelphina Warbler .....	287
<i>Philechela minor</i> .....	182
<i>Phloeotomus pileatus</i> .....	282
Phoenix .....	231
Physiographical Maps .....	2, 10
Physiography .....	1
Pit .....	216
Pigeon Hawk .....	206
Pigeon Roosts .....	193
Pigeons .....	198
Pileated Woodpecker .....	221
Pilot Snake .....	118
Pine Knob .....	17
Pine Siskin .....	246
Pine Snake .....	119
Pineville .....	16, 77
Pine Warbler .....	281
Pine woods Sparrow .....	254
Pintail .....	164
<i>Pipilo erythrophthalmus</i> .....	257
<i>Piranga erythronelas</i> .....	261
<i>Piranga rubra</i> .....	261
<i>Pisania maculata</i> .....	183
<i>Pisobia minutella</i> .....	183
<i>Pitangus derbianus</i> .....	230
<i>Ptilophis melanoleucus</i> .....	119
Plains Gartersnake .....	106
<i>Planesticus migratorius migratorius</i> .....	305
Plantings .....	151
Plastron .....	62
<i>Plectrophenax nivalis</i> .....	347
Pleistocene .....	30, 31
<i>Plestiodon anthracinus</i> .....	74
<i>Plestiodon quinquelineata</i> .....	78
Plover .....	186
<i>Podilymbus podiceps</i> .....	154
Poison apparatus .....	98
Pole-cat .....	342
<i>Poliophtila caerulea</i> .....	300



	Page
Pond River .....	71
Pooecetes gramineus .....	247
Pope, W. T. ....	161
Porzana carolinus .....	179
Pouched Mammals .....	310
Prairie Chicken .....	190
Prairie Horned Lark .....	234
Prairie Meadow Mouse .....	316
Prairie Warbler .....	282
Preacher .....	267
Pre-Colonial Times .....	32
Price, S. F. ....	119, 209, 254
Primitive Man .....	23, 24, 32
Procyon lotor .....	339
Progne subis .....	262
Protection of Birds .....	149
Prothonotary Warbler .....	271
Protonotaria citrea .....	276
Pseudemys elegans .....	67
Pseudemys troostii .....	66
Psittaci .....	216
Pullen, J. S. ....	64, 68, 112, 161
Putorius noveboracensis .....	347
Puma .....	38
Purchase .....	8, 18, 21, 29, 51, 81, 165
Purple Finch .....	244
Purple Gallinule .....	180
Purple Martin .....	262
Putorius vison .....	345
Pygopodes .....	154

## Q

Quail .....	189
Quaternary .....	30
Queen Snake .....	107
Querquada discors .....	163
Quiscalus quiscula acens .....	243

## R

Rabbit .....	312
Raccoon .....	339
Rail .....	178
Rain-crow .....	217
Rainfall .....	11
Rallus elegans .....	178
Rallus virginianus .....	179
Ramey, G. L. ....	130
Raptores .....	201
Rattlesnake .....	99, 136, 139
Raven .....	235
Red Bat .....	336
Red-bellied Water Snake .....	110
Red-bellied Woodpecker .....	223
Red-bird .....	285
Red-breasted Merganser .....	160
Red-breasted Nuthatch .....	296

	Page
Red-eyed Vireo .....	287
Red Fox .....	348
Redhead .....	166
Red-headed Lizard .....	78
Red-headed Woodpecker .....	222
Red Phalarope .....	181
Redpoll Warbler .....	282
Red-shouldered Hawk .....	206
Red Squirrel .....	326
Redstart .....	258
Red-tailed Hawk .....	205
Red-winged Blackbird .....	238
Reelfoot Lake .....	18
Regenstein, A. B. ....	63, 68, 111
Regulus calendula .....	299
Regulus satrapa .....	299
Reithrodontomys hunilis merriami .....	316
Reader, J. E. ....	161
Reptiles .....	61
Reynolds, J. N. ....	112
Reynolds, W. R. ....	64, 68, 112, 134
Rhodes, L. S. ....	64, 68
Rhynchocephala .....	61
Ribbon Snake .....	105
Ricefield Mouse .....	317
Rice Rat .....	317
Richards, L. D. ....	68, 133
Ring-billed Blackhead .....	167
Ring-billed Duck .....	167
Ring-billed Gull .....	157
Ring-necked Duck .....	167
Ring-necked Pheasant .....	192
Ring-necked Snake .....	121
Riparia riparia .....	264
Rivers .....	18
River Valleys .....	50
Robin .....	305
Rockhouses .....	23
Rodentia .....	312
Rose-breasted Grosbeak .....	259
Rough Winged Swallow .....	264
Routt, G. C. ....	161, 165
Ruby-crowned Kinglet .....	299
Ruby-throated Hummingbird .....	228
Ruddy Duck .....	169
Ruffed Grouse .....	190
Russell, J. E. ....	64
Russellville .....	74, 80
Rusty Blackbird .....	243

## S

Salamanders .....	23, 29
Sams, W. ....	157, 158, 161, 170, 182
Sanders, J. H. ....	111, 133
Sandhill Crane .....	178
Sand Lizard .....	77
Sandpiper .....	184, 185, 186



	Page
Sanford, J. ....	162
Sangster, J. ....	133
Savannah Sparrow .....	248
Sayornis phoebe .....	231
Say's Bat .....	335
Scalopus aquaticus machrinus .....	331
Scarlet Tanager .....	261
Scaups .....	167
Sceloporus undulatus .....	73
Sciurus aurocapillus .....	283
Sciurus carolinensis .....	323
Sciurus hudsonicus loquax .....	327
Sciurus motocilla .....	284
Sciurus niger .....	327
Sciurus noveboracensis .....	283
Sciurus rufiventer neglectus .....	326
Scorpion .....	78, 79
Scoter .....	169
Screech Owl .....	213, 214
Scutellation .....	102
Scutes .....	85
Seagull .....	156
Seasonal Distribution .....	152
Sebastian, W. R. ....	64, 68, 112, 134
Semipalmated Plover .....	187
Semipalmated Sandpiper .....	184
Server, A. W. ....	107
Sharks .....	28
Sharp-shinned Hawk .....	203
Sharp-tailed Sparrow .....	249
Shelbyville .....	106
Shipp, R. H. ....	161, 191
Shitepoke .....	176
Short-billed Marsh Wren .....	294
Short-eared Owl .....	212
Short-tailed Shrew .....	330
Shoveler .....	164
Slate-colored Junco .....	253
Smith, E. D. ....	
Smooth-scaled Lizard .....	79
Snake Bird .....	158
Snake-bites .....	29
Snapping Turtle .....	63
Snipe .....	182
Snow Bird .....	253
Snow Bunting .....	247
Snow Goose .....	170
Snowy Egret .....	175
Snowy Owl .....	216
Soft-shelled Turtle .....	71
Soils .....	12
Shrikes .....	266
Shuhart, E. M. ....	181
Shumard, B. F. ....	110
Sialia sialis .....	305
Silvery Bat .....	338

	Page
Sinks .....	21
Sinex, John .....	35
Sitta carolinensis .....	296
Sittidae .....	296
Six-lined Lizard .....	77
Skaggs, V. ....	125
Skink .....	78
Skunk .....	343
Solitary Sandpiper .....	185
Song Sparrow .....	255
Sora .....	179
Southeastern Flying Squirrel .....	330
Southern Downy Woodpecker .....	220
Southern Fox Squirrel .....	327
Southern Golden Mouse .....	319
Southwestern Plateau .....	5
Sparrow Hawk .....	210
Sparrows .....	244
Spatula clypeata .....	164
Spencer, J. R. ....	64, 68, 111, 133, 165
Sphyrapius varius .....	221
Spinus notatus .....	246
Spinus pinus .....	240
Spirit Duck .....	168
Spiza americana .....	260
Spizella monticola .....	251
Spizella passerina .....	252
Spizella pusilla .....	252
Spotted Sandpiper .....	186
Spreadhead .....	126
Springtail .....	164
Squamata .....	61
Squirrel .....	323, 324, 325, 326, 327, 328, 329, 330
Stake-driver .....	173
Stalactites .....	21
Stalagmites .....	21
Stearman, A. ....	134
Steganopodes .....	159
Stedham, G. ....	112
Steganopodus tricolor .....	181
Stelgidoptera serripennis .....	264
Sterna antillarum .....	158
Sterna hirundo .....	157
Stilt .....	182
Storeria occipita maculata .....	110
Storer's Snake .....	110
Striped Lizard .....	77
Strix varia .....	212
Strunk, D. ....	165, 191
Sturnella magna .....	239
Sullivan, N. H. ....	71
Summer Duck .....	165
Summer Tanager .....	261
Summer Residents .....	252
Sunshine .....	9
Superstitions .....	96



	Page
Sutton, W. D. ....	68, 133, 165
Swainson's Warbler .....	272
Swallows .....	262
Swallow-tailed Kite .....	202
Swamps .....	21
Swamp Sparrow .....	256
Swans .....	160, 161, 162
Sycamore Warbler .....	280
Sylviidae .....	299

## T

Tamias striatus .....	322
Tanagers .....	261
Tangaridae .....	261
Tanner, K. ....	111
Tapir .....	30
Taylor, J. B. ....	123
Teals .....	163
Teeter Snipe .....	186
Telmatodytes palustris .....	294
Temperatures .....	9
Tennessee River .....	50
Tennessee Warbler .....	274
Tern .....	157
Testudinata .....	61
Thamnophis proximus .....	105
Thamnophis radix .....	106
Thamnophis sirtalis .....	103
Thompson, G. C. ....	36
Thompson, G. W. ....	63, 68, 111, 133, 161
Thrashers .....	289
Thrushes .....	301, 302, 303, 304
Thryomanes bewicki .....	292
Thryothorus ludovicianus .....	292
Thunder Snake .....	124
Timber .....	15
Timber Rattlesnake .....	136
Terrapene carolina .....	68
Terrapin .....	61, 62
Terrell, G. ....	99
Titmice .....	297
Tomtit .....	297
Tortoises .....	61, 62
Totanus flavipes .....	184
Totanus melanoleucus .....	184
Totipalmate Swimmers .....	159
Towhee .....	257
Townes, F. O. ....	68, 122, 134
Toxostoma rufum .....	291
Tree Duck .....	166
Tree Sparrow .....	251
Tree Swallow .....	264
Troglodytes aedon .....	293
Troglodytidae .....	292
Trumpeter Swan .....	172
Tufted Titmouse .....	297

	Page
Turkey .....	191
Turtles .....	61, 62
Twila .....	80, 119
Tympanuchus americana .....	190
Tyrannidae .....	229
Tyrannus tyrannus .....	229
Tyrone .....	117
Turdidae .....	301
Turkey Vulture .....	201
Turpin, W. G. ....	162, 165
Turtle Dove .....	290

## U

Ungulata .....	338
Upland Plover .....	186
Urocyon cinereo argenteus .....	340
Ursus americanus .....	40, 340

## V

Value of Birds .....	145
Vansell, G. H. ....	88, 118, 134, 331
Veery .....	302
Venomous Snakes .....	89, 90
Vermivora bachmani .....	272
Vermivora celata .....	274
Vermivora chrysoptera .....	273
Vermivora peregrina .....	274
Vermivora pinus .....	273
Vermivora rubricappella .....	273
Vertebrata .....	57
Vesper Sparrow .....	247
Vespertilio lucifugus .....	334
Vespertilio subulatus .....	335
Vesperugo carolinensis .....	331
Vireo griseus griseus .....	269
Vireonidae .....	267
Vireos .....	267
Vireosylva gilva .....	268
Vireosylva olivacea .....	267
Vireosylva philadelphica .....	268
Virginia Deer .....	338
Virginia Rail .....	179
Visitants .....	152
Vulpes fulvus .....	348

## W

Wagtail .....	289
Wapiti .....	37
Warblers 270, 271, 272, 273, 274, 275, 276, 277, 278, 279, 280, 281, 282, 284, 285, 286, 287, 288 .....	268
Warbling Vireo .....	91, 131
Water Moccasin .....	84
Water Snake .....	283
Water Thrush .....	158, 159
Water Turkey .....	283
Water Wagtail .....	154
Water Witch .....	



	Page
Watkins, W. M. ....	68, 111, 133
Waverly Outcrop .....	8, 17
Wayne County .....	24
Waxwings .....	265
Weasel .....	347
Webb, W. S. ....	70
Wesley, W. M. ....	64, 68, 112, 134, 165
Western Coal Field .....	5, 6, 7, 17
Whalin, E. A. ....	63, 68, 111, 133, 161, 165
Whip-poor-will .....	225
Whistler .....	168
Whistling Swan .....	171
White-eyed Vireo .....	269
White-breasted Nuthatch .....	296
White-crowned Sparrow .....	250
White-footed Mouse .....	317
White-fronted Goose .....	170
Whitehouse, J. W. ....	111, 161
White Pelican .....	159
White-throated Sparrow .....	251
Whitlow, W. R. ....	64, 68, 112, 134, 162
Whooping Crane .....	178
Wickliffe, Ky. ....	165
Wickliffe, Robert .....	36
Wicklund, C. A. ....	64, 68, 112, 134
Widgeon .....	163
Wildcat .....	351
Wild Goose .....	170
Wild Turkey .....	43, 191
Willet .....	185
Wilsonia pusilla .....	287
Winter Residents .....	152
Winter Wren .....	293
Wilson, C. B. ....	112
Wilson, F. B. ....	64, 68, 112, 134
Wilson, Gordon .....	156, 157, 158, 162, 164, 165, 166, 169, 171, 182
Wilson, W. C. ....	64, 68, 112, 163
Wilsonia canadenses .....	288
Wilsonia citrina .....	287
Wilson's Phalarope .....	181
Wilson's Plover .....	188
Wilson's Snipe .....	182
Wilson's Warbler .....	287
Wolf .....	41
Woodchuck .....	320
Woodcock .....	182
Wood Duck .....	165
Wood Ibis .....	172
Woodpeckers .....	219, 220, 221, 222, 223, 224
Wood Pewee .....	232
Wood Rat .....	320
Wood Thrush .....	30
Worm-eating Warbler .....	272
Worm Snake .....	125, 126
Wrens .....	292, 293, 294

Y	Page
Yarnellton .....	3
Yellow-bellied Flycatcher .....	232
Yellow-bellied Sapsucker .....	221
Yellow-billed Cuckoo .....	217
Yellow Bird .....	246
Yellow-breasted Chat .....	286
Yellow-hammer .....	223
Yellow-legs .....	184
Yellow Rail .....	179
Yellow-throated Vireo .....	268
Yellow-throated Warbler .....	280
Yellow Warbler .....	276
Z	
Zamelodia ludociciana .....	259
Zapus hudsonius .....	312
Zenaidura macrura carolinensis .....	200
Zonotrichia albicollis .....	251
Zonotrichia leucophrys .....	250